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ORIGINAL ARTICLES.

SECONDARY OR MEMBRANOUS CATARACT.

BY HENRY D. NOYES, M.D., NEW YORK, N. Y.

A clear pupil after extraction of cataract has of late years acquired importance. A diaphanous membrane may seem to offer no important obstruction to vision, but its removal not infrequently results in an increase of visual acuity from 4–10 to 1. In the case of thicker membranes the improvement is still greater. With the increase of simple extraction the difficulties of secondary operation have increased. Foremost among those who have given attention to the subject is Dr. Knapp, of New York, who expects to perform a secondary operation in nearly 60 per cent of his cases; this is due to his peculiar method of dividing the capsule in the original operation. From the earliest days attention has been given to this subject by operators. When inflammatory exudates occlude the pupil, a secondary operation is imperative. Fifty years ago many European operators studied this subject, and various instruments and procedures were devised; among those widely recognized was the operation by the so-called stop-needles of Bowman, which were always employed through the cornea. When extraction with Beer's knife was in vogue, making a wound that comprised nearly half the circumference of the cornea, the use of Bowman's needles —one working against the other—to divide the membrane was a favorite procedure. In occasional cases operators would attack the secondary membrane *per scleram*, but it was recognized that a perfectly clear pupil was secured with some risk; frequently a patient would be advised to have nothing done, provided he could read ordinary print.

A notable advance was made by Dr. Agnew, of New York, who

during the sixties advised the employment of a stop-needle and hook through the cornea for lacerating the membrane, with a view of avoiding injurious traction upon the ciliary processes. Previous to that time beautiful instruments had been manufactured by Weiss, of London, for the purpose of extracting a tolerably thick membrane through a wound about three millimeters long in the cornea. They were called capsular forceps, and in the preaseptic days occasional results of a serious character took place. It was recognized that extraction of the membrane, although it might be admirable in technique, was injurious because it involved traction upon the sensitive ciliary body. Dr. Agnew's operation is still practiced by some surgeons. The writer, recognizing that the cases of occluded pupil where inflammation had seriously imperiled the result were of a critical character, advised a method of divulsion of the thickened inflammatory structure by two blunt hooks (see Reports Royal London Ophthalmic Hospital, 1869, vol. vi, part iii, p. 209). For this class of cases, in which iridectomy had usually been performed, the invention of the method known as the operation by Wecker's scissors took precedence of all others. When, under the influence of the genius of Von Graefe, iridectomy came to be recognized as an essential feature of cataract extraction, a secondary operation by Wecker's scissors often gave excellent results. The writer practiced it with great satisfaction, and published his results. At the present day the simple operation without iridectomy is coming into increasing favor. Given a case which has made a satisfactory recovery, but presents a membranous obstruction, we have a problem before us which can be discussed under the following heads: (1) A circular unadherent pupil which will dilate freely under a mydriatic. (2) A circular unadherent pupil which will not dilate freely under a mydriatic. (3) A pupil adherent and consequently not dilatable; adhesions existing between the iris and the membrane. (4) In cases where iridectomy has been done with adherent pupil, occluded by a more or less dense membrane.

1. If the pupil be free and easily dilatable, one needle, which Dr. Knapp insists must be sharp and have a cutting edge, may serve the purpose. He advises that incision should be made through the least resisting portions of the membrane. In so doing bands may be left which can seriously interfere with vision. The necessary cutting instruments may be of different forms, with blades of greater or less strength, as Dr. Knapp has recommended. Such cutting needles were employed as long ago as 1854 by Dr. Hays, of Philadelphia. In his American edition of Lawrence on Diseases of the

Eye, he describes a knife-needle which at the present day is in common use for certain somewhat severe cases, although, as so often happens in medicine, the author has been forgotten. In the author's text-book, pages 507 to 510, various procedures are referred to. (Treatise on Diseases of the Eye. Noyes: Wm. Wood & Co., 1894.)

Within three years Da Gamo Pinto, who was a favorite pupil of Becker, of Heidelberg, published in the *Annales d'Oculistique* a method of dealing with membranous cataracts by means of an extremely narrow Graefe knife, which for a considerable number of cases he passed through the cornea, and at a subsequent period he entered behind the iris to attack the membrane. I have followed Pinto's method with the excessively narrow Graefe knife *per corneam*, and have found myself in trouble because of the tendency of the knife to enlarge the corneal wound, with consequent loss of aqueous and sometimes of vitreous humor, and in one instance incision of the pupilary sphincter, thereby creating an unpleasant coloboma. It is, therefore, better for cases where the pupil dilates easily and the membrane is thin, to employ some form of cutting needle which shall also have a round shank, whereby the risk of unnecessary enlargement of the corneal wound is avoided, and an operator is free to divide the membrane in whatever direction he pleases. Cases with thin membranes with dilatable pupils are comparatively easy of management, and results are usually gratifying.

2. Suppose the pupil unadherent and undilatable. With these conditions we always have trouble, whether we employ one needle or two needles, or whether we resort to Agnew's method of the hook and stop-needle, for the simple reason that the field of operation is narrow and the mechanical conditions prevent that sweep of the point of the instrument necessary to effect a sufficiently large division of the obstruction. Still further, in case the membrane is thick, under the circumstances named the difficulty becomes greater, and the writer has at times within the last twelve years modified the method by introducing one needle through the cornea and another needle through the sclera posterior to the iris, one instrument working against the other, and has thereby succeeded in accomplishing the desired result. At the same time the resulting reaction has sometimes been severe, and vitreous opacities have ensued which require a considerable period for their disappearance. To meet these difficulties it was found that Pinto's method gave the most efficient and satisfactory result—namely, to pass through the sclera on the horizontal meridian a Graefe knife, which by frequent grind-

ing had been reduced to about one-half the ordinary width, viz., about one or one and a half millimeters, through the sclera into the membrane and make a free division. Pinto does not make reference to one disadvantage attendant upon such a procedure, namely, that if it be found needful to change the direction of the knife and cut in more than one plane to divide bands which are of greater thickness than other portions of the membrane, one is apt to get prolapse of vitreous, and although this, on the whole, has not, in the writer's experience, brought about disastrous results, it nevertheless is obviously mechanically faulty. Therefore for these cases of thick membranes with small pupils not yielding to a mydriatic, another form of instrument has been devised and has proved satisfactory. It is simply a very narrow and thin Graefe knife, which has a cutting edge of about eight millimeters in length, and behind the blade has an extremely thin shank.

This instrument (see cut), made for me recently by Meyrowitz, and which has been from time to time reduced in thickness, has now reached a degree of perfection which renders it available for all the cases now alluded to. The knife-needle is entered through the sclera on the horizontal meridian about three or four millimeters behind the limbus, and the mode which the writer now adopts is as follows: The knife is passed from behind forward, posterior to the iris, until its point is visible on the proximal side of the pupil; then it pierces the membrane and cuts it in a vertical section by a to-and-fro movement, going forward into the anterior chamber; then it is pushed across the pupilary area and penetrates the membrane on the distal side of the pupil, and again by a to-and-fro movement makes a second vertical incision in the membrane. It has been entered so that the blade is either diagonal or flatwise in its relation to the plane of the iris. Having made two vertical incisions in the capsular membrane, the one on the proximal side of the pupil and the other on its distal side, the knife is turned so that its cutting edge is backward and the intervening portion of the membrane is freely divided by a movement toward the center of the eyeball. It will be seen that this maneuver practically forms the letter H, and the knife is made to move in various directions until all obstructive membrane is completely divided and a perfectly clear jet-black pupil is obtained.

No one can criticize the mechanical fitness of such a method,

because it saves traction on the ciliary processes, it completely divides the obstruction, and it secures a clear pupil. The patient may require an anesthetic; the eye will be bandaged and the patient put to bed, because the writer does not profess to have any less respect for the ciliary body than his colleagues, although experience has taught him that with proper asepsis and delicacy of maneuver results fully justify a proceeding which at first seems audacious. The operation of extraction of a tense membrane as practiced thirty years ago with frequency is beautiful, and undoubtedly is still in certain cases justifiable, but it is very difficult to make the instrument employed—the capsular forceps—absolutely aseptic in the first place, and in the second place this extraction, always *per corneam*, is attended often with so much violence to the ciliary body that the writer has had occasionally to deplore disastrous results. On the other hand, the method now commended, although it has not long been practiced, has proved itself worthy of employment, and has not yet given rise to any unpleasant results. The only possibility is the causation of some slight vitreous opacities. It should be remembered that vitreous opacities not infrequently accompany cataract, and an operator is justified in resorting to a method which does not seriously aggravate existing conditions. Speaking from a sufficient experience, the writer is now of the belief that operations for membranous cataract, where the pupil is small, can be performed by this guarded knife-needle with a degree of certainty and of safety that puts this method of operating far in advance of any which has thus far been employed.

3. An adherent pupil, which, of course, is imperfectly dilatable, affords opportunity for the operation described through the sclera, but of necessity in these cases there has been iritis, and reaction of greater severity will follow this operation. If severe iritis has occurred and the pupil has become broadly adherent, reaction of greater degree must be expected, and recovery will not be secured under five or eight days, and it may be necessary to employ the usual proceedings of hot fomentations and anodynes.

4. In an operation complicated perhaps by prolapse of the iris, or where iridectomy has been done, we have to deal with a membrane which is partly the thickened capsule and partly the result of inflammatory exudation. We then resort to the method which Wecker advised — namely, the division by his peculiar scissors (*pince capsulaire*), according to the mode which he described, and which need not now be further expatiated upon. In this class of cases we must, of necessity, expect inferior results, because in all

instances the vitreous will be hazy, and we must accomplish the best that may be possible under the circumstances. Furthermore, it was for this class of cases that Graefe, about 1860, proposed to use what he termed an iridotomy knife, which the writer has rather frequently employed to advantage. But Graefe's iridotomy knife must give place to the Wecker procedure in the large proportion of cases.

Finally, the writer is prepared, in all earnestness and with a sense of his own responsibility, to say that the operation through the sclera by the knife-needle, now presented, is practically devoid of serious risks and can be commended for general adoption. He has taken it up for a large proportion of cases of membranous cataract after having run the gamut of almost all methods, and has adopted the scleral method with some timidity, until recent experience has convinced him not only of its efficacy, but that in the great majority of cases it is not attended by serious risk or unpleasant reaction. Of course, the performance of a scleral puncture should not be undertaken at an earlier period than from one to three months after the original operation.

It yet remains to say that one will sometimes wisely refrain from any secondary operation when the patient's position in life does not demand the very highest vision or when timidity on his part opposes further operations, and he expresses himself contented with such sight as he has gained by the extraction. I have lately declined to operate further in a case where vision was 0.4, because the man was decrepit, of despondent disposition, and had lost the other eye by an unsuccessful operation. The obstructing membrane was thin. Not infrequently a membrane which is very thin for three months after extraction, after another twelve months becomes appreciably thickened and may require interference.

SERIOUS HEART DISEASE WITHOUT RHEUMATISM—A FURTHER REPORT.

BY A. L. BENEDICT, M.D.,

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While rheumatism is especially related to endocarditis, we must not forget that scarlet fever may produce endocardial changes as well as, to a less degree, the other infectious diseases, particularly those usually spoken of as children's diseases. Councilman, Thayer, and Plumer have reported cases of gonorrhea which invaded not only the joints but the endocardium, and I have personally observed one such case. In many instances the most positive bacteriologic proofs of the nature of the endocarditis have been afforded, notably by the authorities cited. My own case recovered, and it was not convenient to make a thorough bacteriologic examination of the blood, even if such could have been considered conclusive evidence of the nature of the endocarditis. Berg (*Medical Record*) has reported a case in which not only endocarditis but pyelonephritis was due to the gonococcus, and from a study of the literature of the subject he notes the fact that endocarditis follows arthritis. This was the sequence in my own case, and is undoubtedly what is to be expected in endocarditis of whatever infectious form, as well as in rheumatic endocarditis. I use this language since it is not positively demonstrated that acute rheumatism is an infectious disease, and since the analogy between acute rheumatism and demonstrably infectious diseases is no closer than between acute rheumatism and chronic rheumatism, which latter is certainly a chemic disease and not infectious, unless in an extremely roundabout way. Berg has emphasized the fact that, at least in his own case, there was not a mixed infection, but that the gonococcus alone was competent to produce the endocardial disease. Eberth, Carbone, and others have demonstrated that the typhoid bacillus may cause endocarditis. Indeed, the generalization seems allowable that any germ or other inflammatory irritant which will cause inflammation of a joint under certain circumstances may invade the endocardium and produce valvular defects.

In this connection I may allude to a patient lately seen with Dr. W. H. Slacer in the ward of the Sisters' Hospital. She was a girl of 15, with well marked mitral regurgitation and slight enlargement of the heart to the left. The case seemed to be acute, and we all agreed that the murmur was not functional or hemic, though

it becomes more and more difficult as one reads the literature on functional heart murmurs to lay down hard and fast rules for distinguishing them from organic murmurs. The patient had a moderate rise of temperature, continuing with remissions for some days. There was practically no joint affection nor complaint of pain. A stained specimen of blood showed no marked abnormality. We considered the case one of mild rheumatic fever, localized in the endocardium.

Last year I reported to the Buffalo Academy of Medicine five cases of serious valvular heart lesion, with no history of rheumatism nor other manifest cause (*American Medical and Surgical Bulletin*, October, 1898). These were not merely cases of mitral regurgitation but involved multiple murmurs, including aortic regurgitation or mitral obstruction, or both, with considerable dilatation. In one case every possible regurgitant murmur was present, as well as mitral obstruction. In the discussion, Dr. B. G. Long suggested that as acute rheumatism was quite common in childhood, these cases probably dated back to a forgotten attack. In two of the cases it was to be expected that relatives of the patient would have remembered such an occurrence; in others it was quite likely that a disease of childhood might have been forgotten. While Dr. Long's explanation is plausible, it is none the less important to place on record the occurrence of heart disease without known predisposing cause. There is, however, an objection to Dr. Long's theory. If we assume that the serious multiple valvular lesions of the cases alluded to, including aortic regurgitation and mitral obstruction, dated back to a forgotten rheumatism of childhood, we have to find some explanation for the fact that the patients lived for many years in apparent health, and, in some instances, performed considerable physical labor and endured exposure to weather, while their hearts were crippled with lesions that we ordinarily regard as quite rapidly destructive. If, by another hypothesis, we assume that the rheumatism was only a first step in the process, and that the development of at least part of the endocardial lesions occurred much later, say within a reasonable time of the occurrence of symptoms of heart failure, we have still to explain the latency of the disease and the circumstances that produced an exacerbation. Personally, I am unable to set forth a satisfactory theory, but would suggest that all of the cases presented immediately and in the history evidences of faulty digestive chemistry, and that the metabolic products thus formed may have acted as irritants to the endothelium of the cardiac valves. While such a suggestion is open to the criticism of a judg-

ment biased by special attention to one field of medicine, it is in line with experiments and quite conclusive clinical evidence of the deleterious action of digestive poisons on the liver, and it is no more far-fetched than some of the reflexes and distant lesions accredited to eye-strain.

I wish to report a few other cases of serious endocardial disease of unknown origin. On March 9, 1899, I saw in consultation with Dr. L. H. Staples, O. K——, aged 48. For eleven years he had been driver and motorman on a street-car. Previously he had worked on the docks, doing much heavy lifting. He was married, had a comfortable home, and denied any habits that would tend to disease. During childhood he had had measles and possibly scarlet fever, but never diphtheria, typhoid, gonorrhea, or rheumatism. In spite of his constant exposure to cold during the winters, he had been well till the winter of 1898-9. The stomach and liver areas were normal, by auscultatory percussion. The heart was half an inch outside the nipple line and presented both aortic and mitral murmurs. There was marked venous throbbing in the neck—diastolic—and the legs were somewhat edematous. A renal complication naturally suggested itself, but Dr. Staples reported the urine normal. Later, the patient went to the Sisters' Hospital, where I saw him with Dr. W. H. Slacer. The urine at this time also was lacking in evidences of renal trouble. While not manifesting typic orthopnea, the patient was most comfortable in the sitting posture, and the dropsy persisted in mild degree. Subsequently he left the hospital, and died at his home in July. There was no necropsy.

Mrs. G——, aged 19, married one year, was seen, like the next patient, in consultation with Dr. Westinghouse, during his service at the Sisters' Hospital. The heart was enormously enlarged, so that a swelling of the left mammary and hypochondriac regions was visible. As determined by an arrangement of "straight-edges," the left chest in the nipple line projected 1⅞ inches further forward than the right (see illustration). The only murmur that could be plainly heard was mitral obstructive, but none of the sounds were clear, and murmurs were heard everywhere. An interesting fact was that the beat of the apex served to locate the stomach, just as by ordinary auscultatory percussion; in fact, digital percussion produced precisely the same results as cardiac. In one case, seen a year ago, this rare phenomenon was very marked intermittently, although the heart was normal. The patient denied having had rheumatism, and said that she had enjoyed good health till three years previously, when she had typhoid fever. Following this she

began to notice symptoms of circulatory weakness, and the precordium had gradually enlarged. It is of extreme interest to know whether the heart was actually free from disease prior to the typhoid, and if this article comes to the notice of Dr. O'Keefe, of Hartford or Providence, whom I have not been able to reach by mail, and who attended the patient during her typhoid attack, I hope he will communicate. Dropsy did not develop, except to an insignificant degree, until shortly before the death of the patient, which occurred about a month after she was admitted to the hospital.

Patient sitting erect facing forward. Apparent rotation of the body is due to enlargement of the precordium. This enlargement shows less prominently in the picture than it really is.

Mrs. B——, aged 43; aortic obstruction with regurgitation, and mitral regurgitation; her heart was dilated, extending by auscultatory percussion one and a half inches to the left of the nipple line. She denied rheumatism and syphilis, but has had scarlet fever, measles, whooping-cough, and typhoid—none since early adult life. She had considered herself well till three months ago. The kidneys were firm and the urine normal; the liver was slightly contracted. There was no dropsy, except of the legs. At present she is quite comfortable, and the heart is performing its function very well.

NURSING IN THE LYING-IN PERIOD.

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I shall not attempt in this brief paper to give a full description of the rules which should be observed in nursing the puerperium, but will merely call attention to a few points, which if carefully observed will add much to the comfort and safety of the patient.

Ergot is usually administered after confinement to cause firm uterine contraction and to further involution. This it usually accomplishes, but if the effects of this drug are not pronounced within two or three days, it will not act at all, and it frequently produces a marked disturbance of the stomach and of the lower intestinal tract. Under such circumstances its administration by the mouth should be suspended, and it should be given by the rectum. Prompt absorption takes place from the lower bowel, and a flabby, softened uterus becomes hard; after a few injections it resumes its normal shape and the periodical metrorrhagias cease. An aqueous solution of ergot is always employed for this purpose. It is added to a small quantity of glycerin and the whole dissolved in half a glass of lukewarm water. The injections should be made once in twenty-four hours, and the total quantity of fluid employed should be small, to prevent rectal tenesmus.

Micturition is usually watched by the attending physician with too great anxiety. The catheter should be used only if necessary, as it is a not infrequent observation that after it is once employed it cannot be given up for a long time. While we can avoid infection of the bladder in the majority of cases, protracted catheterization carries with it a great many inconveniences and not a few dangers, among which are occasional injuries to the urethra with consequent traumatic urethritis and rare fissures of the neck of the bladder. During delivery a large amount of fluid is lost by perspiration and by hemorrhage; the activities of the kidneys may be further reduced by anesthetics. Under these circumstances a rapid accumulation is not to be looked for, and usually twelve hours may be allowed to pass before marked accumulation will take place. In the meantime efforts should be made to produce natural micturition —a warm poultice applied to the urethral opening and gentle pressure used to stimulate the organ. Of course, the catheter should be employed if early indications for its use occur.

A not infrequent mistake is a false diagnosis of cystitis during

the puerperium; this leads to local treatment of the bladder, which is unnecessary. It is to be remembered that in difficult and protracted labors, where there is considerable pressure upon this viscus, it is not infrequently mechanically interfered with in its functions. Its mucous membrane is always edematous during labor, and if it sustains some injury, subepithelial hemorrhages may take place which are followed by desquamation of the epithelial lining. These patients complain of a feeling of heaviness and dull pain just above the pubes. The urine is cloudy, due to the large amount of epithelium thrown off. A desquamative catarrh such as is here described usually recovers without local treatment, which is only necessary where the trouble is of a high degree and pain is severe. Such cases are easily relieved by a single injection of iodoform mixed with oil. In preparing the emulsion, the oil should be carefully sterilized and no glycerin should be used, as the latter from its affinity for water will increase the pain. If the usual treatment for cystitis is employed and the bladder is flushed with disinfecting and caustic solutions, we give unnecessary pain and derive no benefit. If carried too far, such treatment may result in ulceration of the lining membrane. Diagnosis of cystitis should never be made without carefully considering all the symptoms; pain and cloudiness of the urine are not sufficient, but the sediment must be examined microscopically. If pus is absent there is no cystitis, but a desquamative catarrh. In obtaining specimens for examination care should be taken that the urine is not mixed with lochial secretion, as the latter commonly contains pus cells. In doubtful cases cystoscopy can be employed, which is done without difficulty on a patient lying in bed. If it is necessary to introduce a catheter, care should be taken to avoid touching the denuded and sensitive trigonum.

The pelvic articulations do not receive their full share of attention. If there is pain in the symphysis or in the sacroiliac articulations, or if there is complaint of permanent pain in the thighs, some distortion of the pelvic articulations should be looked for. In such cases a firm bandage should be applied to the pelvis, which will give comfort, immobilize the joint, and avoid the accumulation of exudate and fibrinous deposits in the joints.

Fissures of the areola of the nipples will often prove a source of great trouble to the patient and physician; salves and lotions rarely give relief, and unless radical measures are employed infection may take place and an abscess result. The simplest and most certain means of dealing with them is the actual cautery, which produces an eschar of sufficient thickness to protect the underlying tissues

and prevent infection. The galvanocautery is preferable to the Paquelin, as the latter frightens the patient and causes pain. The galvanocautery can be placed in position before the current is turned on, and the whole operation is done so quickly that the patient scarcely perceives the slight pain. In cases that will not permit the use of a cautery, the best application is a four-per-cent chromic acid solution applied with a small brush. By this means a dry eschar is produced.

In the diet of the puerperium the intestinal tract should not be overloaded with food. Eggs are often employed, but patients who suffer from habitual obstipation or flatulence should not be given eggs, as they often cause fermentation in the intestinal tube. In some cases bowel movements are produced with very great difficulty. Cathartics, high rectal injections, and enemas all follow. In these cases the faradic current should be employed, applied in such a way as to stimulate the muscular structure of the colon. A roller electrode is the most convenient to use in these cases, and the current should be of moderate intensity. In differentiating between atonic bowel complications and the hysterical ones, we should always examine the abdomen for the hardened nodules, which are tender and which disappear and again reappear. If present, these clearly point to the neurotic character of the trouble and call for the administration of nervines and antispasmodics.

92 STATE STREET.

SPONDYLITIS DEFORMANS, SPONDYLARTHRITIS, OR OSTEO-ARTHRITIS OF THE SPINE.

BY O. M. STEFFENSON, M.D.,
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This is a chronic affection of the vertebræ, producing osteophytes between their articular surfaces, which terminates in partial or complete ankylosis of the spine.

The disease has hitherto received no particular mention in text-books as a distinct and definite affection, but has generally been classified as a phase of arthritis deformans or rheumatoid arthritis. This has led many practitioners to employ antirheumatic remedies in the treatment of the trouble when, on account of the depressing influence of many of these drugs, they are certainly contraindicated.

The first report of cases which represented the characteristics of this disease seems to have been made by Bradford, in 1883. He described three cases occurring in males between the ages of 30 and 36 years. In two of these the entire spine and ribs were ankylosed; in the third the ankylosis was limited to the dorsal region, no other joints being affected. Marie similarly notes five cases, one at 60 years, the others occurring between the ages of 30 and 40 years. Strumpell, under the term painless ossification of the spine, mentions three cases. Mutterer and Popoff each have reported a case, one at 58 years, the other at 28 years, occurring in males, the spine and hips being ankylosed. Marie and Astie report the case of a male of 60 years, in whom the spine was ankylosed. Bechtereu mentions five cases, two of which were women of the age of 50 years, in whom the spines were rigid.

In a very complete paper, J. E. Goldthwait has described the disease and added the report of ten cases to the list already at hand. Seven of these were males between the ages of 21 and 70 years; the remaining three were women, one 35 and another 58, and the third 70 years of age. In these cases the pronounced featnre was the ankylosis of part or the whole spine; in some the ribs were involved.

No definite causes of the disease have been determined. A history of gonorrhea and rheumatism can be obtained in some, but the greater number do not give such a history. Occupation does not seem to play an important rôle, the foregoing cases having been found in engineers, firemen, laborers, clerks, dressmakers, etc. Traumatic influences, exposure to wet and cold, are probable factors.

The pathological lesions consist of nodular enlargements at the edge of the articular cartilages of the vertebræ, which subsequently

ossify, the process at times extending into the ligaments which have their insertion in that vicinity. While this is taking place at the edge, the central portion of the cartilage atrophies. The posterior part of the vertebra and arch are sometimes affected, and by the narrowing of the spinal canal serious nervous symptoms may be produced.

The disease occurs mostly during middle life, although cases are seen in early adolescence. The patient experiences considerable pain in attempting to flex some portion of the spine; it may begin in the dorsal region and gradually involve the whole spine, or the process may limit itself to certain portions of the column. The articulations involved gradually become entirely ankylosed, the pain disappearing when the osseous union is complete. In some instances the ribs also become rigid, when the respiration will be found to be entirely of the abdominal type. The pain which exists on attempt at motion of the spine may vary from a sharp twinge to one of the most excruciating character. The spine, in a typical case, is perfectly rigid and admits of no motion; it may be straight or bent, according to the amount of destruction which has taken place in the articular cartilages. Nervous symptoms are not present unless the posterior arches are involved, when pressure symptoms such as muscular weakness and atrophy, also numbness and hyperesthesias of the extremities, may occur. The diagnosis is made on the appearance of pain on movement of the spine, associated with the gradual production of rigidity. Pott's disease in its early stages might confuse, although the history and progress of the disease would differentiate in the majority of cases.

It is an incurable affection, ending by partial or complete fixation of the spine.

As the disease is in all probability a nutritional disorder, all substances which tend to the upbuilding of the system should be employed, and likewise any drug which tends to depress should be shunned. The antirheumatic remedies, such as iodide of potash and the salicylates, are of no value. The tonics—iron, strychnine, etc.—exert a beneficial influence. Mechanical support has been recommended by some. Manipulation of the spine is of no value and may increase the trouble. Efforts at increasing the nutrition of the patient, and the use of tonics, are followed by the best results.

A typical example of the disease is that of a male aged 38 years, a bookbinder by occupation. At the age of nine years, after exposure to wet and cold, he developed a case of acute articular rheumatism, affecting the joints and the extremities. The attack

lasted for six weeks, and from this attack recovery was complete. At the age of 20 a second attack similar to the first occurred, and during the succeeding five years the patient suffered from attacks of articular rheumatism, each attack lasting from three to four months. From these he recovered, with the exception of deformities of the feet consisting of a hallux valgus and contraction of the third phalanx of the left foot into the plantar surface, necessitating amputation. He then remained free from symptoms until his thirty-seventh year, when the characteristic features of the present affection appeared. During the month of November, 1898, the spine began to pain from the first dorsal to the last lumbar vertebra. The column gradually became rigid, the pain diminishing as the ankylosis developed. During this process the ribs also gradually became immobile, necessitating abdominal respiration. In April, 1899, the cervical spine underwent the same process and is now entirely rigid, with the exception of the atlo-axial and occipito-atlantal articulations, which admit of slight motion. The limits of these movements are sharply defined, the head after a partial rotation or nodding coming to a sudden stop. The urine is normal, as also are the cardiac sounds. Aside from the fugitive pains described by the patient there are no signs of disease of the nervous system. The knee-jerks are slightly increased; there is no incoordination and no disturbance of sensation.

SOME CONSIDERATIONS IN SUGAR-TESTING, WITH DESCRIPTION OF A METHOD FOR THE DETECTION AND ESTIMATION OF SUGAR IN THE URINE.

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The discovery of sugar in the urine is one of the portentous happenings that may arise during urinary analysis, and indicating, as it often does, a grave disturbance of nutrition, its presence is rightly looked upon as one of the most significant disclosures which such a procedure may develop. In proportion to its importance is the necessity for having at our disposal the means for its certain detection. In the selection of a test for sugar in the urine the same qualifications should be borne in mind as regulate the choice of other important urinary methods. These essential qualities are a suitable delicacy and a competent reliability of reaction. The crudest chemical procedure will suffice to demonstrate pathologic urinary elements such as albumin and sugar when they exist in large amount in the urine. It is only as we approach the question of the detection of slight traces of these bodies that the superiority of one method over another becomes matter for discussion. It is true that a smaller quantity of sugar in the urine than two grains to the ounce will but rarely awaken suspicion of its presence by giving rise to clinical symptoms. This fact, however, does not by any means indicate that the lighter grades of glycosuria are without pathologic importance. Normal urine contains no trace of sugar that is demonstrable by the tests in use. Any amount, therefore, that can be detected by the chemical means at our disposal is distinctly abnormal and points to disturbance of starch assimilation, which may develop in time into a diabetic glycosuria; hence it is of the utmost importance to possess a method of sufficient delicacy to develop an unequivocal reaction with small amounts of sugar.

The second consideration of reliability of reaction is hardly less essential. The class of reagents known as "copper tests" is employed by the profession almost to the entire exclusion of other less convenient, but perhaps more reliable, methods. Although one and all lack somewhat in stability of reagent and constancy of reaction, they have won their way into favor by reason of their simplicity, sensitiveness, and ease of application. They will probably retain their present vogue until some method is devised that will possess in an equal or greater degree the same advantages combined

with superior accuracy and permanency. They all depend for their reaction upon the power which grape-sugar possesses of reducing cupric oxide to a lower form of oxidation with the formation of a yellowish-red precipitate of suboxide of copper or cuprous oxide. It is a well known fact that there are non-saccharine reducing substances present in the urine which may, under certain circumstances, cause a partial reduction of copper-test solutions. These are certain bodies of organic nature which are present in both normal and abnormal urine. Principal among them are uric acid, creatinin, hippuric acid, and glycuronic acid. Under ordinary circumstances they are not present in sufficient quantity in the urine to effect any appreciable change in the test solution. All that is necessary to make these bodies operative toward the copper reagents is to increase their proportionate amounts in the urine by concentration of that fluid. For this reason it is no rare occurrence to encounter urine of increased specific gravity and heightened acidity, but containing no sugar which possesses a distinct reducing power over these tests. This is doubly unfortunate, because it is in urines of high density that we anticipate the presence of sugar; and it is in such cases where discrimination is essential that the results are apt to be most misleading. The only way to prevent this unhappy accident and still retain the principle of the copper tests is to compromise with these disturbing bodies, and by diminishing the amount of urine used in applying the tests reduce their effect to a minimum. This cannot be done with Fehling's test or with Trommer's test (the methods most liable to false reaction) without seriously impairing their sensitiveness. Haines's test constitutes a considerable improvement in the manner of application, only eight drops of urine being used. This amount of urine can hardly contain enough organic reducing substance, however much the urine is concentrated, to produce any appreciable effect upon the reagent. Although fulfilling the demand in this regard, Haines's method leaves much to be desired in delicacy and also in stability.

Five years ago (*New York Medical Journal*, July 27, 1894) the writer introduced to the attention of the profession a test for the detection and estimation of sugar in the urine. Various claims were then made for its superiority over other methods of its class; continued use of the test during the interval which has elapsed since that time has served to demonstrate its almost perfect adaptability for clinical purposes. It belongs to the class of tests already referred to—the copper tests—and depends for its reaction upon the same principle that governs Trommer's, Fehling's, Haines's, and other

less well known modifications which are included in that class. The advantages claimed for my test are stability, sensitiveness, and accuracy. Its sensitiveness is all that could be desired, since it gives a plain, easily perceived, and characteristic reaction, with as small an amount of sugar as one-half grain to the ounce, or one-tenth of one per cent. Reliability of reaction is secured by using only eight drops of urine in its application. An additional and most important advantage is that with some change in procedure the reagents used for the detection of sugar may be employed for its quantitative estimation. The test solutions are prepared as follows:

REAGENT NO. 1.

Sulphate of copper, c. p.	27 grains.
Glycerin, c. p.	3 drachms.
Distilled water	2½ drachms.
Liquor potassæ q. s. ad	4 ounces.

Dissolve the sulphate of copper in the glycerin and water; gentle heat will facilitate solution. When cool, add the liquor potassæ, mix thoroughly, and filter. Filtration should invariably be performed, since it secures greater stability.

REAGENT NO. 2.

A saturated solution of chemically pure tartaric acid in distilled water.

Mode of Application.—A drachm of the cupric oxide solution (Reagent No. 1) is poured into an ordinary test-tube and brought to the boiling point over a spirit lamp. Then add three drops—not more—of the tartaric acid solution (Reagent No. 2), and boil again. A slight deepening in color is the only change observed to follow the addition of the tartaric acid. Add the suspected urine drop by drop, boiling and shaking the test-tube after each addition until reaction takes place, or until eight drops of urine have been added. If no change follows the addition of this amount of urine, sugar is not present. If sugar is present, a yellowish or reddish deposit of cuprous oxide is thrown down, differing in density and richness of coloring according to the amount of sugar present in the urine. The reaction produced by small traces of sugar will be found to deepen somewhat if the test is put aside and reexamined in a few minutes. Applied in this manner the test will detect one part of sugar in one thousand of urine, or one-tenth of one per cent. More than eight drops of urine should not be used, since that amount never fails to develop a distinct reaction when one-half grain of sugar to the ounce is present, and a less quantity is of no interest to the clinician. Greater delicacy may of course be secured by increasing the amount of urine employed; but by so doing accuracy is sacrificed for increased delicacy, and one of the special virtues of the method is destroyed.

A remarkable feature of the test is the perfect clearness of the reagent during its application. The employment of tartaric acid endows the method with its peculiar delicacy and serves as well to hold in solution the earthy phosphates of the urine, so that the phosphatic cloud, which is apt to form with other copper tests owing to the alkalinity of their reagents, never appears.

In adapting this test for the quantitative estimation of sugar, the principle of the so-called "ammoniated cupric tests" has been employed. The same reagents are used, and in the same proportion, as when it is applied for qualitative purposes, ammonia, however, being added in sufficient quantity to insure a clear end-reaction, and also enough water to dilute the test, so that the progress of reduction may be observed with exactness. The process is as follows:

Take one drachm of the cupric oxide solution (Reagent No. 1), and add to it three drops of the tartaric acid solution (Reagent No. 2) and one drachm of liquor ammonia U. S. P. These are thoroughly mixed together and poured into a small glass flask, beaker, or other containing vessel, with enough distilled water to raise the total volume of the test to one ounce. The addition of the ammonia changes the reaction which characterized the test when used as already described for the detection of sugar. The cuprous oxide formed by the reducing power of the diabetic sugar is held in solution by the ammonia, and does not at any time appear as the reddish precipitate of the preceding method. The blue protoxide of copper, which gives the reagent its characteristic color, is, however, still reduced by the sugar, the resulting product being dissolved and held in solution by the ammonia as quickly as it is formed, the test remaining clear throughout, and the blue color fading to final disappearance. The end-reaction is the complete disappearance of the blue color, and at that point the test is stopped.

The amount of the test solutions, carefully measured and mixed as indicated, represents a fixed sugar value of one-tenth of a grain of grape-sugar—that is, it is reduced and decolorized while boiling by exactly one-tenth grain of sugar. The flask containing the reagents prepared as directed is placed over an alcohol or Bunsen flame, and when it is smartly boiling the urine is added slowly drop by drop from a burette or graduated minim pipette. Care must be exercised not to add the urine too rapidly, four or five seconds being allowed to elapse between the first few drops; as the blue color becomes perceptibly fainter, the interval is increased until eight or ten seconds separates the last additions. The exact point of complete reduction is attained when the blue color has dis-

appeared, the test solution becoming transparent and clear with a slight opalescent tint. At this point the addition of the urine is stopped, and the number of minims of urine which it has been necessary to add to produce the result is carefully noted on the graduated stem of the burette or pipette.

As the amount of the reagents employed has a fixed equivalent of one-tenth grain of sugar, it follows that the number of minims of urine necessary to complete the reaction must contain exactly that amount of sugar, providing the test has been properly conducted. To determine the amount of sugar present divide four hundred and eighty (the number of minims in an ounce) by the number of minims of urine required, and divide the quotient by ten. This will yield the number of grains of sugar to each ounce of the urine examined.

In place of a flask or beaker an ordinary test-tube of large lumen may be used as a receptacle in which to boil the test. If this expedient be adopted, the reagents should not be diluted with water as in the flask procedure. The greater crudity of this modification necessarily involves some loss in accuracy, but even then the results are sufficiently exact for most clinical purposes.

In whatever manner the test is applied, it is advised that all urines having a specific gravity exceeding 1028, which by the qualitative test give evidence of containing a large amount of sugar, should be diluted with an equal quantity of distilled water before being submitted to estimation, and the results subsequently multiplied by two. This precaution renders the application of the test capable of delicate and exact supervision. No other previous treatment of the urine is necessary before submitting it to this test. The presence of albumin may be disregarded. Deposits of pus and other anatomical or chemical precipitates should be removed by filtration before testing, to secure a clear end-reaction. The greatest care must be taken not to add the urine too quickly to the boiling test. On the other hand, if the urine be too gradually added volatilization of the ammonia may proceed more rapidly than reduction, and toward the end some suboxide may escape solution and make the test turbid. Such an accident necessitates a reapplication. It is well to bear in mind that once the test is started it must be carried to completion without interruption of ebullition, else some spontaneous reoxidation of reduced protoxide may result and the accuracy of the estimation be thereby disturbed.

After completion of the test and when the solution has begun to cool, absorption of oxygen from the air takes place, and presently

the blue color will all return to the reagent, owing to the reformation of the blue protoxide by spontaneous oxidation. This coloration is quickly dissipated by heat. Antiseptics added to the urine for preservative purposes are apt to affect the color of both the qualitative and quantitative reactions.

The delicacy of the test results in a singularly clear and transparent end-reaction. The fact that the same test solutions are used for estimation as are employed for the detection of sugar constitutes a great convenience and avoids a multiplicity of reagents. The accuracy of the results obtained by the method may be verified by the experimental employment of standard solutions of chemically pure grape-sugar in normal sugar-free urine.

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A STUDY OF AURAL VERTIGO.

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In considering the complex phenomena forming the vertiginous state, one must necessarily recognize its antithesis, equilibrium; disturbance of the latter along certain lines constituting what we know as vertigo. Equilibrium is the composite result of the education by experience of vision, hearing, and touch, and is "dependent upon a normal consciousness of the proper relationship of things outside of the centers of consciousness, with the sensation of a motor process in it."[1] Hallock[2] considers equilibrium as the result of numerous afferent impulses embracing the peripheral end organs, as the skin, eyes, and semicircular canals; the coordinating centers located chiefly in the cerebellum and basal ganglia; and acting with these the efferent nerves of the muscles. In the normal individual it is dependent upon impulses given to the endolymph of the inner ear in various ways, and then transmitted by the peripheral filaments of the auditory nerve to the brain centers, where efferent impulses are directed in various lines to the portions of the body concerned. The labyrinth, while always an integral link in the chain of equilibrium, is but one part only and undoubtedly exercises a constant activity of its fluid contents in the appreciation of the muscle precision necessary to obtain the complex coordination of the individual. Should marked changes occur or the tension balance of the labyrinth become either plus or minus to an exaggerated degree, vertigo is produced, but the bodily equilibrium when disturbed is not necessarily accompanied with the former.

By the term vertigo we do not mean only disturbed or defective equilibrium, but it consists of a symptom-complex of which the essential feature is the sensation of moving or the appearance of movement of objects, when there is no real existence of such; or, as James[3] aptly says, it is a feeling of movement of our own head and body through space. Vertigo may be objective or subjective, and while many classifications have been advocated, they are of little practical value, as a number of the causes productive of the attack frequently operate at the same time, and any classification based upon causal or etiological relations must necessarily be of doubtful utility. The intensity of the attack varies from slight dizziness to utter inability to maintain the equilibrium, the following cases presenting in a way the two extremes of this symptom when the aural origin is most prominent:

F. D——, male, aged 48 years, worker in boiler shop. Always healthy until two years previous, when gradual impairment of hearing and tinnitus developed. Within a year after the onset of the aural symptoms a mild grade of vertigo developed, occurring about once a month spontaneously, and could be produced volitionally by leaning forwards. The attack was augmented by this posture of the body; it lasted but a few minutes, and did not incapacitate him for work. No other symptoms were present, and the changes in the middle ear were not marked, the membranæ tympani being practically normal in tension and physical appearance. Hearing was greatly diminished for all the usual tests, and bone conduction was relatively impaired to a greater degree than air conduction. This evidently was a case of chronic labyrinthine concussion, the vertigo resulting from changes in the intralabyrinthine tension and apparently being dependent upon the susceptibility of the inner ear from its lowered tonus, due to the affection already existing.

The second case represents a more severe type, and occurred in a woman aged 61 years. Two months before she was first seen tinnitus developed in the right ear, and three weeks later vertigo commenced. The membranæ tympani were normal, hearing was unaffected, and the only symptom complained of was the constant vertigo, which was intensified on the slightest movement, and when she attempted to walk she would stagger and fall. Nausea was occasionally present when the attacks of vertigo were unusually severe; she had lost the knowledge of space location, and when she would elevate her head an exaggeration of the vertigo would take place. This upward movement of the head would immediately bring on an attack, excessive noise would increase the dizziness, but closure of the eyes produced no effect, and she had a constant tendency to fall always to the right, this ear alone being affected. Exudation with increased tension was undoubtedly present in the labyrinth, and this view was given added support by the use of potassium iodide, which diminished the symptoms until they no longer annoyed her.

In the majority of cases well defined symptoms of aural implication are seen, tinnitus being most common, and the other symptoms forming the complex of intralabyrinthine tension are usually disclosed if carefully sought for. Premonitory symptoms of an attack, or of an exacerbation when the vertigo is continuous, such as a slight degree of dizziness or a sudden sense of darkness, are quite frequent. A definite aura preceding the attack and warning the patient of its impending arrival is not so often observed, but when

present may assume various forms, most frequently a peculiar sensation of the arm or head due to alteration in vasomotor tonus, and it may have its incipiency in almost any portion of the body, the stomach participating in some cases, while in others a sense of throat constriction heralds the imminently approaching attack.

However mild the vertigo, two groups of phenomena are invariably associated, the first being the motor disturbances, while the second are the circulatory, producing vasomotor changes and subjective sensations, and sometimes well defined hallucinations. The motor disturbances are characterized by the inequality of equilibrium and the tendency to fall, due either to the apparent movement of objects (objective vertigo) or to the individual feeling as if he was moving in various planes (subjective vertigo). Usually the tendency to fall is exaggerated when the individual is standing, but may be quite marked when in a recumbent position, the falling direction being in a plane with the canal or ampulla affected; while as a rule the patient falls away from the affected ear, but in some cases he falls in an opposite direction, due to overbalancing himself in endeavoring to regain his equilibrium. The motions, however, may be forward, backward, from side to side, upward or downward, or a combination of two or more may exist at the same time, producing a gyratory movement. The vertigo is greatly exaggerated by sudden movements of the head, especially if made in the axis of the affected canal, and in cases of long standing the gait is apt to become affected even when the vertigo has ceased for a considerable time; the patient lurching from side to side in an apparent endeavor to seek support.

Aberrant vasomotor disturbances are frequently associated, such as sweating and superficial congestion, especially of the arms and face, while nausea and weak pulse are quite frequent. The presence of these symptoms in greater or less degree, resulting from disturbed vasomotor control, in consequence of the original impulse transmitted via the auditory nerve being in excess and stimulating adjacent areas, as explained by the so-called overflow theory; although it does not necessarily depend upon excessive stimulation, but can occur when the adjoining cells are more susceptible to excitation than normal. Mental phenomena, such as hallucinations, occur in a small proportion of cases, and according to Gelle[4] the sensory or motor phenomena from otitic vertigo show that irritation of the auditory nerve also acts on the psychic centers and provokes the appearance of actual hallucinations of the senses and of movements. Other mental phenomena are present in long-standing cases,

such as a sense of dread, impairment of memory, and even mild grades of melancholia. In true vertigo consciousness is never lost, except as the result of exaggerated vasomotor disturbances causing fainting, loss of consciousness not being a part of the vertiginous state proper. Rarely does the vertigo remain for a long time, nor is it usually continuous, but even when continuous for several months the degree is not always the same, as great fluctuations in intensity occur at irregular intervals. The patient may have a severe attack, and then not another for several years, although they may occur at frequent intervals, and when continuous they rarely last longer than two to three months, and may then suddenly disappear.

The importance of the semicircular canals as an end organ deserves some consideration, and their direct connection through the auditory nerve with the floor of the fourth ventricle and crus cerebelli places them with the utricle and saccule as the major organ concerned in the relation of the individual to other bodies and his position in space. Not only is there direct communication between this organ and the higher centers, through the eighth nerve, but another source of close bondage exists equally important in this connection, that of the cerebral fluids and the endolymph of the canals. In the production of vertigo gross pathological changes are not necessary, as slight functional alteration in pressure is frequently productive of the attacks, this being marked in the vertigo of sea-sickness, with its attendant vascular phenomena. As has been seen, any cause acting upon the tension of the intralabyrinthine fluid and disturbing its normal equilibrium will produce vertigo, such as serous exudation into the inner ear, or the transudation of blood or actual hemorrhage, the latter producing the complex of symptoms designated as Ménière's disease. Anemia, hyperemia, and inflammatory changes may be productive of vertigo, and when due to the two former it may be periodic in character, depending upon the changes in the quality and quantity of the blood itself.

Among affections of the middle ear which in many instances are accompanied at irregular intervals with vertigo are intratympanic exudations, ankylosis of the ossicles, and adhesions of the stapes to the oval window. Unless the pressure upon the intralabyrinthine fluid is marked, vertigo is not always present, but let there be exaggerated alteration in the general circulation, or local congestion of the auditory apparatus, and vertigo is rapidly brought into prominence. It is also common to many pathological changes in the middle ear, and may be a symptom of the extension of the disease to the labyrinth, especially in certain occupations, as that of

the boilermaker, where the effects of concussion damage not only the middle ear but the internal ear and auditory nerve. Obstructive affections of the external canal, such as impacted cerumen, will produce vertigo, while we may have it as a result of morbid alterations of the absorbents, interfering with the proper transudation of fluids, with augmented pressure in the internal or middle ear and interference with nutritive processes. Barr[5] divides aural vertigo into four classes: that due to Ménière's disease; to pressure on the walls of the middle ear; to pressure on the walls of the external canal or outer surface of drum membrane; and to irritation of the auditory nerve.

Primary labyrinthine disease is of quite rare occurrence, the vertiginous symptoms usually resulting from sclerotic changes in the middle ear; but in individuals suffering from this latter affection care must be exercised not to consider the vertigo always as a result of the middle-ear changes, as there may be intercurrent cerebral disease, and this should be kept in mind in a study of a case of this nature. For vertigo may also be induced by disturbances of the function of the vestibular nerve, by pressure upon the auditory nerve in its course, or by irritation of its fibers, and it may be produced experimentally by passing an electric current through the head, the violence of the vertigo so produced being in proportion to the strength of the current and the proximity of the electrodes to the semicircular canals. In individuals with unstable equilibrium it may also be produced by rapid change in the position of the head, such as whirling around on the heels, and also by the forcible use of the Politzer bag in endeavoring to open the Eustachian tubes. Vertigo may be of cerebral origin, or the ocular apparatus may play a prominent part; and, again, it may depend upon disorders of the viscera, or toxemia, that of nephritis resulting from circulatory changes and even hemorrhages into the labyrinth, after the same principle as hemorrhagic retinitis, the auditory end organ being a point of lessened resistance. The sudden suppression of long-continued discharges is sometimes attended with this symptom, and it also takes place in lithemia, while reflex vertigo may result from affections of the stomach and uterus, and in susceptible individuals indiscretions in diet often produce a severe attack. Finally, it may occur as the result of sudden changes in atmospheric pressure, as in caisson disease.

That the labyrinth is an indispensable factor in the production of vertigo is proven both clinically and experimentally by the fact that when it is irritated vertigo takes place and continues until the

irritation is removed, the parts totally destroyed, or the individual becomes accustomed to the new relation of things and the relation of head movements and the general muscular sense. This latter proposition in no way negatives the close relationship existing between functional or organic changes in the labyrinth and vertigo, for vertigo cannot occur when the labyrinth is totally destroyed. This is clinically shown in affections of the internal ear with associated vertigo and impairment of hearing, where the lesion progresses to absolute deafness, when the vertigo ceases permanently; showing that it was caused by irritation of the nerve filaments of the semicircular canals, and disappeared when these fibers were destroyed in the morbid process. It cannot be denied that a considerable number of cases result from organs far distant from the semicircular canals, such as the stomach. One of the most marked cases of vertigo I have seen occurred in a boy from enormous distention of the stomach due to excessive indulgence in unripe fruit. But even in these cases aural symptoms are present and can readily be found if searched for.

It is not here desired to claim that vertigo originates exclusively in the semicircular canals and their ampullæ, but it cannot exist unless there are functional or organic changes in these canals, often however depending upon other causes, a number of which have been mentioned. Hogyes[6] believes that the acute attacks of vertigo which occur with augmented pressure in the tympanic cavity are referable solely to irritation of the vestibular terminations of the auditory nerve, while Gowers states that 90 per cent or more are due to changes in the labyrinth. In all cases, and from whatever source the primary cause proceeds, there is an increased pressure upon the contents of the labyrinth; this altered change of pressure in the vascular channels and endolymph of the canals does not necessarily indicate the presence of inflammation, as vasomotor changes occur much more frequently. In the individual of advanced years who has been suffering from vertigo for a long period of time it will often be found that the vertigo will permanently cease as a result of the senile, in addition to the morbid, changes destroying the tissues intimately concerned in its production.

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BOOK REVIEWS.

HYGIENE OF TRANSMISSIBLE DISEASES. By A. C. Abbott, M.D. Price, $2.00. Philadelphia: W. B. Saunders. 1899.

This timely work of 311 pages forms a most important contribution to the recent literature of hygiene. It does not claim to be a complete and systematic work covering the entire hygienic field, but it deals with by far the most important part of the subject, that of the transmissible diseases. The book is essentially the subject-matter of a course of lectures on general hygiene, delivered at the University of Pennsylvania. The work opens with a brief introduction, in which is mentioned the very earliest writings containing directions regarding the public health. The sanitary laws of the Jews are spoken of as unquestionably shielding them from the ravages of pestilence. The foundation of the science is attributed to von Pettenkofer and his works on Ventilation and Heat, and the Relation of Soil Moisture to Health. The author pays a tribute to the exceedingly important labors of Koch in stimulating a more exact study of the transmissible diseases. He says that while occasionally sanitary science is attacked, and while every suggestion and every rule laid down by a sanitary code cannot be maintained, yet the general results cannot but convince the most skeptical of the enormous saving in life effected by the observation of sanitary laws.

The first section of the work deals with the causation of disease, divided into predisposing and exciting. The former includes age, sex, occupation, density of population, heredity, and season. The latter includes chemical causation, physical and mechanical causes, animal and vegetable parasites, and bacteria, the latter described under the term "vital causes." By this is meant those living animal and vegetable parasites which gain access to the body and there excite disease by their development.

The second and larger portion of the work is devoted to a study of the causation, modes of dissemination, and prevention of special diseases. These include typhoid fever, Asiatic cholera, amebic dysentery, tuberculosis, acute croupous pneumonia, diphtheria, epidemic cerebrospinal fever, influenza, bubonic plague, suppurative septic infections, venereal disease, leprosy, tetanus, anthrax, glanders, actinomycosis, madura foot, smallpox, varicella, measles, scarlet fever, whooping-cough, mumps, malarial fever, yellow fever, dengue, typhus fever, relapsing fever, rabies, diseases due to animal parasites. Perhaps it is unnecessary to say that typhoid fever is regarded by the author as due to the bacillus typhosus of Eberth and Gaffky, which is almost invariably a water-borne bacillus, though other methods of infection occasionally occur. Some of the most striking and best studied epidemics, including those of Lausen, Wittemburg, Plymouth, and Philadelphia, are given.

Cholera is declared to be a non-contagious disease, and like typhoid fever it is disseminated through the water, though the food supply may be easily contaminated.

The mode of infection in tuberculosis is stated to be from the dried sputum inhaled with the atmosphere. Naturally, the continuous respiration of air in a room occupied by tuberculous patients is more or less dangerous. There is no

reference to the interesting studies by Klebs on the projection of sputum by coughing; also that there is a well founded belief that the dried sputum is nearly, if not quite, innocuous.

Pneumonia is said, in the majority of cases, to be caused by the micrococcus lanceolatus, though it is stated that the anatomical and clinical characteristics of the disease are sometimes found associated with the streptococcus pyogenes, the pneumobacillus of Friedlander, and the staphylococcus pyogenes. It is stated that the sputum of pneumonia contains the live germs, and that the power of infection remains after drying.

The influenza bacillus is described as the morbific agent in influenza. Regarding its dissemination the author says: "It is impossible to say what the conditions are that favor its development and spread. Its dissemination over large areas is often so rapid as to hardly admit of the explanation that it is carried from place to place by travelers or through merchandise." The organism is commonly destroyed by drying, and is probably not carried by the wind. Our knowledge is not sufficient to say that it is directly transmissible from individual to individual, but a great deal of circumstantial evidence points to this being the case.

Suppurative septic and venereal infections are adequately considered. There is nothing calling for special comment in these chapters.

The dissemination of leprosy by a fish diet, advocated by Hutchinson, is incontinently negatived. The transmission by heredity is thought to play some rôle, and great doubt is expressed of the direct contagiousness of the disease.

Scarlet fever, whooping-cough, mumps, measles, varicella, and smallpox are classed among the diseases due to unidentified causes. Yellow fever, he thinks, must still be regarded as among the diseases in which the cause is not known. Neither the work of Sternberg nor that of Sanarelli is conclusive.

The treatment of hydrophobia by antirabic inoculations is said to be upon a thoroughly sound basis, the results leaving no doubt as to its efficacy. A fair average mortality for all cases of bites from mad animals is 15 per cent, while the mortality of those bitten upon the head, face, neck, and hands ranges from 60 to 80 per cent. The mortality at the Pasteur Institute, which in 1886 in 2671 cases was 0.94 per cent, had fallen in 1897 to 0.39 per cent in 1521 cases.

The work has a chapter on the general prophylaxis of infectious diseases; it is written from a clinical standpoint, and is exceedingly compact and readable.

The work as a whole is brief, but omits nothing that is essential. In style it is a model which shows the facility with which the English language lends itself to scientific statement. We doubt if within the pages of the book can be found a sentence that is obscure or uncertain in meaning. It is well issued by the publishers, and a few original plates have been inserted in the text.

DISEASES OF CHILDREN. A Working Manual for Students and Practitioners. By George M. Tuttle, M.D. Philadelphia and New York: Lea Brothers & Co. 1899.

This forms one of Lea's series of pocket text-books. There are 386 pages devoted to a systematic treatise on pediatrics. The author in his preface tells us that the requirements of the beginner have been especially kept in view in preparing the work. The effort has been made to cover the ground fully yet in

a concise manner, with especial reference to the physiology of infancy and with artificial feeding rather than the pathological states found in childhood. Such conditions as do not differ from the same diseases seen in adult life are but briefly described. The first brief chapter deals with the infant at the time of birth and subsequent development. Like so many condensed works of the kind, the bulk of what is said upon this subject amounts to mere definitions. Thus, in describing the development of the speech, the writer says: "This function is very variable in its development. Very much depends upon the efforts at training, as institution children always talk much later than those brought up at home. By the end of the first year the child should begin to say a few words, and by the end of the second year should form a few sentences. If there has been no effort at speech before the end of the second year probably some defect is present, or 'deaf-mutism' may be suspected." If "by the end of two years" a physician is only led to suspect that the hearing is impaired or lost, or there is some other defect, it is time that he made a diagnosis. It is just such *laissez faire* which leads to a failure of diagnosis and a consequent loss of valuable time in beginning treatment. It should be possible to make a diagnosis between deafness and primary mental defect long before the end of the second year. The importance of the recognition of these early signs cannot be overestimated. If Wyllie's table had been introduced showing the development of forms of expression, it would have taught the student how early a diagnosis could be made in deficiencies of the most important organ of the body, the brain.

The chapter on infant feeding leaves little to be desired; it is concise, and contains all that is useful upon the subject, in such a way that it is easily available for practical application. Sterilized milk is said to be free from ordinary germs, including those causing diarrheal diseases, tuberculosis, diphtheria, typhoid, and other fevers. That such milk causes constipation in infants is believed by the author, but he is in some doubt that sterilization causes a destruction of the "vital principle" by which rickets and scurvy are induced. Pasteurization is described as much less injurious to milk, as it is only heated to 167° F. The latter sometimes fails to destroy all of the bacteria. Milk laboratories are commended, but the great disadvantage is the expense. The most approved methods of modifying the milk in a domestic way are given so plainly that there should be no mistake in their application.

Diseases of the intestinal tract are adequately considered. This is followed by the various diseases as modified by childhood but which are common to adult life.

The work is uniformly issued like the others of the series, and has an attractive red binding.

DIE KRANKHEITEN DER PROSTATA. Von Dr. A. Von Frisch. Wien: Alfred Holder. 1899.

This work forms one of the parts of Nothnagel's special pathology and therapy, and is in itself a complete treatise upon the prostate and its diseases. The work opens with a brief account of the anatomy and physiology of the prostate. This is followed by a chapter devoted to the method of examination of the prostate, and a third deals with congenital abnormalities of this organ. The diseases of the prostate properly begin with an account of acute prostatitis; this includes the subheading, catarrhal, follicular, and parenchymatous prostatitis,

with a short account of phlegmon and of phlebitis of the prostate. Chronic prostatitis and the neuroses of the prostate furnish subjects for two of the longer chapters.

The body of the work is taken up with a discussion of the hypertrophy of the prostate, which is discussed in relation to its pathology, anatomy, causes, symptoms, course, diagnosis, and treatment. The author discusses the treatment of prostatic hypertrophy under two heads, the radical and the palliative. He leans strongly toward palliative treatment in the majority of cases in which it is suitable, especially if it is combined with general hygiene and dietetic treatment. Bottini's operation is said to be indicated in chronic complete retention, while if the contractile power of the bladder is lost, it should not be employed. Cystitis and kidney disease, as well as chronic inflammation of the prostate, do not contraindicate this treatment. The success of this operation in incomplete reduction is not so good. The danger of Bottini's method is said to be slight, but not so entirely devoid of evil consequences as Bottini claims. The complications following the operation are extensive sloughing and pus infection, with a consequent thrombosis and phlebitis. The statistics of 127 cases are given; of these, sixty-two are reported as cured, thirty-four improved, and nine died. In favor of the operation is the ease with which it is done, its adaptability to the different forms of obstruction, and its relative safety. As a rule, patients are not confined to their beds for any great length of time. The objections to it are its uncertainty and the impossibility of saying which cases will be cured and which will receive no benefit from the operation. The ligation of the pudic arteries in this disease is disposed of in a few words as a procedure quite dangerous and very uncertain in its results. The value of castration is discussed, and a critical *résumé* of the literature is given. The great haste with which the operation was adopted by surgeons and the enormous number of worthless reports which appeared have served to obscure the true value of the method. Operations have been made without study of the cases before operation, and reports made long before definite results could be obtained. A summary of the best reports up to the present day shows a recovery or marked improvement in nearly half of the cases, with a mortality of 15.5 per cent. Resection of the vas deferens as a remedy for this condition is stated to have given nearly as good results as castration, and the mortality is less, being stated at from six to seven per cent.

The work closes with short chapters devoted to atrophy, stone, and tumor of the prostate. An excellent bibliography accompanies the volume.

PRACTICE OF MEDICINE. A Manual for Students and Practitioners. By George E. Malsbary. Philadelphia and New York: Lea Brothers & Co. 1899.

The author adopts a very simple classification for his compact work on the Practice of Medicine. It is composed of six chapters, dealing respectively with infectious diseases, diseases of the digestive organs, of the respiration, of circulation, diseases of the blood, diseases of the genito-urinary organs. Tuberculosis and leprosy, as well as syphilis and gonorrhea, are properly included among the infections. In this the author follows a more correct though less usual classification. Malaria forms the connecting link between the infections diseases and those caused by animal parasites. Dysentery has evidently been a disease which was difficult to classify, as those cases which are caused by the

ameba are probably due to animal parasites, while other forms are due to a great variety of bacilli, the most prominent being the bacillus coli communis, the bacillus pyogenes, and the various staphylococci. There is no chapter on diseases of the nervous system, though we fail to see why it was not accorded some consideration in a work of this kind.

It is impossible to present the practice of medicine in anything like a volume as small as this one, and the results are exceedingly unsatisfactory. In its title-page it claims to be a "manual;" as a matter of fact it serves to fill up the ranks of a series of text-books. If by some accident the entire edition were to be destroyed, the loss would not be felt by medical literature. This is no reflection upon the author; he has done his work well in the space at his command. That he was called upon to write a work of such contracted proportions is probably due to a demand on the part of students and the profession for a work of this character. If it meets the views of those who care for nothing better, no one should object to their being supplied. To any one wishing a treatise on the practice of medicine which can be read in three hours, we would recommend this work; if, however, they have more time that they can spare for this useful department of medicine, we recommend that they choose a more ambitious work.

THE NERVOUS SYSTEM AND ITS CONSTITUENT NEURONES. By Lewellys F. Barker, M.B. Tor. New York: D. Appleton & Co. 1899.

This volume of 1122 pages forms the most important contribution to the anatomy of the nervous system of late years. It had its origin in a series of articles which were begun in the *New York Medical Journal* in 1897. These were continued at intervals for two years, but the mass of material proved to be too great to admit of its being presented in a medical journal. In the first part of this volume the newer conceptions of the histology of the central and peripheral nervous organs are reviewed. In the succeeding chapters the attempt has been made to apply the neurone conception to a description of the complex structure of the nervous system. The author especially accents the statement that the term neurone is used throughout in the widest sense to mean the cell belonging to the nervous system with all its parts.

The work begins with a short history of the development of the neurone concept, and includes a description of the studies of His, Golgi, Forel, and Ramon y Cajal. Then follows a chapter dealing with the external form of neurones and a further careful study of their internal structure. Then follows a description of the histogenesis of the neurone, and a description of the neurone as a unit in physiological and pathological processes. The remaining two-thirds of the book is taken up with a description of the method by which the neurones are grouped together to form the complex nervous system like that of man and mammals. The conception of the neurone as held in this book is one that brings the pathology and physiology of the nervous system into line with cellular pathology in general. Neurone is everywhere to be translated by the word cell.

The work is well issued, adequately illustrated, and is quite essential to any one who would keep abreast with the late advances in neural anatomy.

EDITORIAL COMMENT.

THE APPOINTMENT OF MEDICAL INSPECTORS IN THE SCHOOLS OF CHICAGO.

Dr. W. S. Christopher, of Chicago, a member of the school board, has been making an active canvass in favor of the appointment of medical inspectors in all of the schools. After a long debate the Committee on School Management of the Board of Education decided to recommend that four thousand dollars be appropriated to maintain fifty inspectors until the beginning of the year 1900. All of the members of the committee were convinced that the plan was a good one and ought to be inaugurated; but the finances of the Board at the present time are depleted, and the matter of providing schools and teachers is paramount, as hundreds of pupils are not now properly cared for by the schools.

It is claimed that there has been a marked increase in the number of cases of scarlet fever and diphtheria, and that this has been due to the dissemination of these diseases through the schools. The very marked increase in these disorders has been in the sections of the city in which various forms of faith-healing and Christian science have been most in vogue. These people believe that contact with a physician tends directly to impair one's health, and that the way to keep well is to maintain that there is no disease or sickness. The bare admission that a person has a disease is sufficient to establish it. The effect of such beliefs and practices favors the spread of epidemic diseases; hence the necessity for medical inspectors in our schools is emphasized by the development of these peculiar fads.

The proposition of Dr. Christopher for school inspectors has met with some opposition, even among those who presumably have some knowledge of sanitary science; one of these, a professor of pediatrics, has the following to say: "Dr. Christopher's proposition to inspect the throats of schoolchildren is either a huge joke or another phase of the gold-brick swindle. The result of such an inspection, if conscientiously and scientifically carried out, would, from one point of view, be a distinct saving to the taxpayers. If Dr. Christopher excludes from the schools all the children that have diphtheria bacilli in their throats, the $4,000,000 worth of school buildings which the Board of Education proposes soon to erect will be wholly unnecessary. Probably 50 per cent of the children now attending the schools would be sent home to play in vacant lots until their

throats were cleared of the Klebs-Loeffler bacillus, which is held by some to be the active cause of diphtheria. In my opinion, and in the opinion of many other physicians, they are simply concomitants of the disease, and their presence in the child's throat is not evidence of his diphtheritic condition.

"There is a growing sentiment among physicians and scientists that germs and microbes are really our friends and not our enemies. They are found, it is freely admitted, in connection with diseases, but the worst that can be said of them is that they are in bad company. . . . The modern germ theory is based upon Jenner's great discovery of vaccination, but the basis is entirely illogical, as every scientist ought to know that there is no legitimate analogy between vaccination with a virus of a similar disease—such as cowpox for chickenpox—and the inoculation of a human body with the virus cultivated in the body of a lower animal from the real virus of the same human disease.

"The bacteriological laboratory of Chicago has already cost the taxpayers of the city some hundreds of thousands of dollars, and a considerable minority of the medical profession is asking what is the good of this expenditure. It is taxing the people for a fad. If Superintendent Andrews can listen to the senseless protests of men who object to the 'Recessional,' and of Christian scientists who object to the teaching of physiology in the public schools, I believe he would do well to consider the protest of a multitude of physicians who are disbelievers in the ability of bacteriological laboratories to diagnose diphtheria."

The above betrays such ignorance of modern pathology that we should not waste space in quoting it, or our time in commenting upon it, if it were not for the fact that it was reported in a daily paper, and consequently may have an important influence in shaping the public health policy, and is leveled directly at the reform advocated by Dr. Christopher. We are told that the germs of tuberculosis, diphtheria, enteric fever, cholera, and the plague are associated with dead tissue, and that they may be performing a useful function in getting rid of this "dead tissue." We would like to have pointed out where, and in what quantities, dead tissue is found in cholera and enteric fever. We should also like to have him tell us what useful function the malarial organism or trichina perform in the human economy. Of course, he can easily see that the parasite of scabies has furnished one of the foundation stones of homeopathic practice, the doctrine of psora, or the phenomena of irritation. It ought to be possible for the professor to obtain some pure cultures

of the anthrax bacillus entirely separated from any dead material; this he could inject beneath his skin or rub into a small abrasion. He would then have a fine exhibition of how this small organism eliminated "dead tissue;" it might even go to the extent of employing a hearse.

Where he tells us that the modern germ theory is based upon Jenner's great discovery of vaccination, he gives us a new departure in pathology. We had always supposed that the foundation of the germ theory rested upon the demonstration of a microorganism which was always present in a given disease, and which, if removed and cultivated outside the body, would always produce the same disease in a healthy animal.

As to the Bacteriological Laboratory of Chicago having cost the taxpayers of the city hundreds of thousands of dollars, we are surprised to learn of this fact. We had supposed that the sum was very much less than this.

Considerable skill is shown in that best of all methods of refuting an opponent, misstating the other side. He has the capacity to build a straw man and then fall violently upon him and tear him limb from limb, exhibiting the torn fragments as fine examples of his logical powers. He starts off with the affirmation that the medical inspectors are to go about examining children's throats, and are immediately to send them away to play in vacant lots, providing they present traces of the deadly Klebs-Loeffler bacillus. This, we take it, will not be the business of the medical inspector. If perfectly conversant with his duties, he will be able to recognize the clinical manifestations of diphtheria, apart from its bacteriological diagnosis; the latter is one, but not the only, means of making a diagnosis of diphtheria. The health department of the city of Chicago and well educated physicians recognize that the Klebs-Loeffler bacillus is often found in the throats of healthy children.

THE TRANSMISSION OF THE AGGLUTINATING SUBSTANCE OF THE TYPHOID BACILLUS TO NURSING INFANTS.

Recent experiences by Courmont and Cade on the transmission of the agglutinating substance of the typhoid bacillus to nursing infants is found in the *Lyon Médical* of September 3. They have considerable interest from their bearing upon the general subject of immunity, both by heredity and that artificially induced. The researches of Achard and Bausonde long since proved that the milk of women with typhoid fever may acquire the power of agglutina-

ting Eberth's bacillus. If the milk can contain the agglutinating substance, it is possible that immunity can be conferred in this way upon the child. Such has been proven to be the case in several instances, and from a study of the question the writers assume that if the agglutinating power of the blood of the nurse is placed at 200, the milk will be about thirty and the blood of the infant about ten. The demonstration that this agglutinating substance found in the blood-serum of typhoid patients can be liberated by glandular epithelium and later absorbed from the alimentary tract of infants so as to be found in the blood-serum is most important. Castaigne, in November, 1897, described an example of this transmission of the agglutinating power. A mother was in the second week of typhoid fever when her child was weaned. At this time the agglutinating power of the blood of the infant was found to be 1 to 40; the next day it had fallen to 1 to 20, the next to 1 to 10, and four days afterward the reaction was negative.

These observations have importance from the bearing which they have upon the method of administering antitoxins. When thyroid extract was first used in myxedema it was thought to be necessary to give it hypodermically. Later it was found that simple thyroid feeding, or even the administration of desiccated glands, was quite as efficient in overcoming this disease as was the hypodermic use of the substance. This marked a great simplicity in thyroid medication, as the administration of complex extracts of organic substance is attended with considerable risk if they are injected under the skin, and safety is only reached by the use of a somewhat complicated technique.

The administration of antitoxin, thanks to the skill with which it is prepared by certain manufacturers, is attended with little or no risk, so far as blood poisoning is concerned, and the efficiency of hypodermic injection leaves nothing to be desired. There is a slight risk in injecting any substance under the skin, though antitoxic serum is devoid of danger, unless it is accidentally contaminated. This, of course, may happen somewhere in the process of manufacturing, through some failure in the technique, or it may occur at the time the injection is made. The introduction of antitoxin beneath the skin is attended with some irritation, slight in some cases, while in others erythema and urticaria are produced at the site of the injection. Induration follows in many cases, and it is accompanied by some pain.

There have been occasional references during the last two years to the successful administration of antitoxin by the mouth, and a

few in which it has been administered by the rectum. The observations of Courmont and Cade which we have noted clearly show the transmission of the agglutinating power through the alimentary tract. It is a fair deduction that this agglutinating power in typhoid and the antitoxic principles found in blood-serum belong to the same class of substances, if they are not identical. Administration of antitoxin by the rectum is a method which should commend itself to clinicians. Absorption from the lower end of the rectum is directly into the circulation, the veins from this part not forming a part of the portal system. Antitoxin used in this way would have to pass but a single membrane before entering the circulation, and it would not be subject to the action of any digestive juice. The power of absorption possessed by the lower end of the rectum is not fully appreciated, and it is not employed as a medium for the administration of remedies as frequently as its merits indicate. For purposes of immunity antitoxin could be employed very freely used in this way; it would meet with little objection on the part of the laity, and there is every reason to think that its efficiency is nearly if not quite equal to the hypodermic injection, though it is possible that the dose which should be employed would be somewhat greater than when it is administered under the skin.

THE EXTERNAL ANTISEPTIC TREATMENT OF SMALLPOX.

From time to time there have been references to the external treatment of smallpox by antiseptics. It has long been recognized that an impervious covering by which air is excluded from the surface tends to prevent ulceration with consequent pitting. The clinical history of smallpox shows it to be a primary fever, usually of no great severity and of short duration, which rarely, if ever, proves fatal. This is followed by the characteristic vesicles accompanied by secondary fever, and is largely proportioned to the extent and severity of the eruption. The so-called black smallpox is nothing but an exceedingly rapid inflammation in which we have hemorrhage into the vesicles, which mixed with the pus, instead of giving the characteristic yellowish crust, forms one which is black. The great fatality of this form of smallpox has long been recognized, many writers claiming that no case of hemorrhagic smallpox ever recovered.

R. H. L. Bibb, in the *Texas Medical Journal* for November, 1899, publishes a paper on the treatment of variola with bichloride of mercury baths. In an editorial comment on this paper, in the

same journal, we are told that the discovery of this treatment deserves to rank second in importance to that of Jenner. By it smallpox will be disarmed of its terrors and its dangers. The treatment will become to smallpox what antitoxin is to diphtheria. The paper is pronounced to be the most important of the decade. Bibb states that the credit of the discovery is to be given to T. C. Osborn, who has written him of the great value of this treatment. Osborn claimed that by frequently sponging the variolous patient with a hot solution of bichloride of mercury, one-to-one-thousand and stronger, the disease could be arrested before reaching the suppurative stage. It also prevented disfiguration.

Bibb treated fifty-five cases at the American Hospital in the City of Mexico, with only two deaths, in both of which antecedent chronic disease played an important part. He claims that it will prevent itching, odors, pustulation, abscesses, and pitting, and that by it the mortality is greatly lessened.

This discovery, so enthusiastically heralded, while by no means new, serves to call attention to the possible value of local treatment in this disease. Alonzo Bryan, in the *Medical Record* of July 10, 1896, stated that the eruption could be arrested in its vesicular stage. He believed that the pustular stage was due to a secondary infection of the vesicles by a pyogenic organism. He reported the case of a patient in whom the hands and forearms, the site of a papillary eruption, were washed with soap and water, and disinfected with alcohol and corrosive sublimate, one-to-five-hundred, followed by a solution of hydrogen dioxide. The parts were in addition wrapped in borated cotton. The vesicles treated in this way did not go on to suppuration, but dried down into adherent scales. When vesicles formed there was no pitting. In this patient the vesicles which were not treated ran the usual course. F. S. Purman (*Medical Record*, Sept. 5, 1896) treated two cases of variola antiseptically by a different method. As soon as the papules developed into vesicles, the surface was scrubbed with soap and water, followed by a solution of hydrogen dioxide. The vesicles were then opened and the cavities touched with pure carbolic acid, and the surface again washed with hydrogen dioxide and oiled to relieve the smarting, and finally covered with cloths wrung out of carbolized water.

J. Moir, in the *Edinburgh Medical Journal* for January, 1898, says that masks, puncture of the pustules, and such treatment are entirely valueless. He increases the elasticity of the skin by having it rubbed with oil early in the disease, and believes that the resulting deformity is lessened. Moir has treated over four thousand cases of smallpox.

The antiseptic external treatment of smallpox certainly presents a fascinating field from a theoretical standpoint. A surgical axiom is that we should remove pus wherever found. Perhaps this seems imperative when dealing with a large abscess, but the pustules of smallpox, while small, in the aggregate contain a considerable amount of pus. The danger to the patient is in proportion to the amount of surface involved. It seems reasonable that the opening of these abscesses, evacuation of the pus, and the sterilizing of the surface, are important procedures. Of necessity it must lessen the absorption of infection and decrease the inflammatory reaction in the skin.

The best method of accomplishing this has not yet been determined. It would seem that the bichloride of mercury, which has been most used in these experiments upon smallpox vesicles, has some distinct disadvantages. It lacks penetrating power, due to the fact that it coagulates albumin. This is obviated in some of the other salts of mercury, notably the last addition, mercurol, in which the mineral has been combined with nuclein. Several new antiseptics have been added to the list, such as the formalin preparations, which may be of value. The discovery of Phelps that alcohol antidotes carbolic acid is one that may have an application, as it would easily admit of the use of pure carbolic acid applied to the interior of each vesicle, providing they were afterward scrubbed out with alcohol. This would prevent excessive absorption of carbolic acid, and at the same time efficiently disinfect these small pus pockets. There is no reason why the pustules should not be treated surgically; it can certainly do no harm, and there is some evidence that goes to show that it may be of considerable value.

THE "FILLER" NEVER DIES.

The printer and editor understand by a "filler" the short item which is put in to fill out the form so as to complete a page; in this way the heading of a succeeding article appears at the top of the page. Fillers are to be distinguished from "padding," which is matter that is inserted to complete the journal when copy is short. In the case of medical publications "padding" is conveniently furnished by the "selected" article. This is usually taken from another publication. The heading indicates that it is not original, and usually credit is given to the journal in which it first appeared. Another form of padding is the lifting of an article bodily from the transactions of a society and publishing it as an original.

We have gone into the distinction between filling and padding to show that there is a wide difference between them. The filler is a necessity at all times, while padding is only occasionally required. Padding if wisely done always gives us something that is good and interesting, as the editor has a wide field to select from. The filler is chosen with reference to the number of lines of copy that it will supply, and not for its interest to the present generation. There is a time when the filler is fresh, and green, and interesting, but that is in the springtime of its existence. It soon withers and then floats about through the vacant galley spaces of the medical journals; occasionally one is lost and is replaced by something new; some pass out of use early and others last for years. A fine old filler is found in a recent contemporary, printed October 2, 1899; it reads:

"*Hebrew Physicians at Moscow.*—It would seem that the Russian authorities think it may be possible for Hebrew scientists to attend the medical congress at Moscow next summer. It does not seem probable, however, that Hebrew physicians will subject themselves to the surveillance of Russian police; their scientific enthusiasm will not carry them over the Russian border. Orders have been sent by the foreign ministers to the Russian consuls and ministers to foreign countries to the effect that all passports of all persons going to the Twelfth International Medical Congress at Moscow must be *viséed* without regard to sex or sect. It seems rather incongruous for an international scientific society to meet in a country that requires the scientist to arm himself with a last century passport in order to attend the congress. To be sure, the scientist may consider himself a missionary, and Russia the country in most need of a scientific congress.—*Pacific Medical Journal.*"

In crediting no date is given; this is wise in using fillers, as less discrimination is needed in picking them out, and it also betrays age. It is not a bad plan to have a few yards of them hanging up in the composing-room, and saves much trouble to the editor. When the printer reaches a little vacant space in making up the page, all he has to do is to reach for one of the waifs and insert as many lines as he is short.

Perhaps it is unnecessary in discussing the above filler, which we have quoted in full, to tell our readers that the Twelfth International Medical Congress was held in Moscow in August, 1897, and that it has long since passed into history. The Thirteenth Medical Congress will be held in Paris in August of this year. The filler was taken from an editorial criticism in one of the Berlin journals,

which was called forth by the action of the Russian Government in the latter part of 1896, to the effect that the Jewish Exclusion Act would apply to delegates to the International Medical Congress. This raised such a protest in Berlin that it was feared by the Russian authorities that the success of the Congress might be in danger. The substance of this editorial comment in the Berlin journal appeared in an Eastern medical publication, and was copied extensively over the country. Two and a half years after the Congress is held we still find it upon its rounds.

IODISM.

A curious phenomenon has been noted in the production of iodism from small doses, and the comparative immunity which attends the administration of large quantities of these salts. Not only are the symptoms of acute iodism disagreeable, but in many cases they become almost dangerous in their intensity, especially if associated with cardiac weakness and respiratory incompetency. As a rule they amount to little more than a congestion of the upper respiratory passages, and the patient usually attributes them to a cold and not to the drug. They are characterized by an increased secretion of the laryngeal, pharyngeal, and nasal mucous membranes, suffusion of the eyes, and occasionally some swelling of the throat.

At one time it was supposed that this reaction of the iodides was an indication in cases of syphilis that the drug was no longer needed, and by some it was thought that the development of iodism was a valuable diagnostic point in determining the presence or absence of syphilis. These views have been largely abandoned, owing to the large number of cases in which their incorrectness was fully demonstrated. There remains the unexplained fact that small doses of iodides are more frequently followed by iodism than the larger doses. This is not appreciated as widely as it should be, and many cases of nervous syphilis would be promptly benefited by massive doses of the iodides. In many cases ten or fifteen grains of iodide of potassium or sodium is given in a glass of water and is promptly followed by iodism of more or less severity. The physician, instead of disregarding these symptoms and exhibiting the drug in large doses, either diminishes it or withdraws it altogether. There can be no question of the value of massive doses of iodides in the treatment of syphilis of the nervous system; there is no other drug or combination of drugs with anything like their efficiency,

but they must be given with a free hand, the beginning amount being not less than forty to sixty grains three times a day. It is a well recognized fact that these large doses, which can often be carried to three or four hundred grains in a day, are not often followed by iodism and not often by gastric disturbances, if the drug is well diluted in water. A drachm should be diluted by at least a pint of water or milk. If the patient will tolerate a still larger quantity of fluid, a quart of water may be used. Of course, this large quantity of fluid cannot be taken at one time, but if the dose is divided this amount can easily be reached.

An explanation of this peculiarity of the iodides is furnished by v. Cyon (*Centralblatt für Physiologie*, Nos. 7 and 8, 1898), who says that iodine salts circulating in the blood are changed into iodothyrin through the influence of the thyroid gland, and this substance produces a reaction. If, on the contrary, the iodides are administered in very large doses, they act as diuretics and are promptly eliminated by the kidneys in the form of soluble salts.

"DE NOVO" ORIGIN OF SYPHILIS.

The old theories of spontaneous generation survive long after they have been refuted by conclusive demonstration and experiment. Recently Shaw MacKenzie argues for the *de novo* origin of syphilis. He says we cannot assume that all contagious or morbid poisons have had an existence from the beginning, and it is correct to suppose that the original causes which produced these morbid poisons may now be in action. MacKenzie's error is in his use of the word morbid poisons, which has led to a confusion in his mind of bacteria with the enzymes, ferments, and toxins. If the poison of syphilis belongs to complex organic bodies, it may have its origin in bacterial growth, or may be the product of a simple chemical reaction. In such case it is conceivable that it may be produced under a variety of circumstances, and all that is necessary to expect are certain concurrent conditions which would result in its production. If, however, we assume that it is due to a living organism or germ, then to assume its *de novo* origin is to accept spontaneous generation. We suppose from the text of MacKenzie's article that he believes in the Mosaic account of creation when he says that one cannot accept the idea of a poison having had an existence from the beginning. The idea of a "poison" being a parasite and having "being" seems not to have occurred to him. We presume from an orthodox standpoint there is difficulty

in assuming the existence of bacteria before the flood, because it is difficult to see how these could have been destroyed by mere application of water, no matter how excessive. To assume strictly the Mosaic account of creation it is necessary to believe that bacteria were created at the same time with other organic forms and all of their pathogenic properties, which they have retained ever since. Evolution, which denies spontaneous generation, accounts for many peculiarities of bacteria. It is to be remembered that the lifetime of a bacterium is very short, hundreds and even thousands of generations being produced within a comparatively short time. Under such circumstances variations due to environments are much more rapid than in organic structures with a longer life history. It is conceivable, therefore, that in the development of different species and types of bacteria there may have been comparatively rapid changes which may account for the development of pathogenic germs from comparatively innocent organisms. If it is in this sense that MacKenzie speaks of the origin of the poison of syphilis we would agree with him, but insist that his use of the words "*de novo*" is a most unfortunate expression to employ in such connection.

OSTEOPATHY IN OHIO.

An editorial in the *Cleveland Journal of Medicine* for November, 1899, says that the Supreme Court of Ohio has rendered a decision in the case of the State Board of Registration against William Leffering, an osteopath of Toledo. The full text of the decision is not in hand, therefore its exact effect cannot be fully appreciated; but in a general way it upholds the decision of the lower court, which holds that osteopathy does not come within the provisions of the act regulating the practice of medicine. This decision, in effect, practically legalized osteopathy in that State, as it declares that it is not a branch of medical science as defined by the law. According to the Ohio statute, "any person shall be regarded as practicing medicine or surgery within the meaning of this act who shall append the letters M.D. or M.B., or for a fee prescribe, direct, or recommend for the use of any person any drug or medicine, or any other agency, for the treatment, cure, or relief of any wound, fracture, or abdominal injury, infirmity, or disease." It is interesting to note that, according to the Supreme Court of Ohio, osteopathy is not an agency for the treatment or relief of any injury, infirmity, or disease.

This decision of the Supreme Court of Ohio is of considerable

interest to physicians. Too long they have taken the view that the medical practice act should be leveled at suppressing Christian science and various other forms of quackery. Much of this practice falls within the constitutional limitations that preserve the liberty of the individual—not the liberty of the quack to prey upon the public, but the right of the person afflicted with disease to have any form of treatment which he desires. The evil of quackery is greatest when it is registered and practiced under the protection of the law. When it is once clearly shown that an individual or a so-called school is not registered and that individuals are practicing their calling not as medical men, but simply as masseurs or otherwise engaged in caring for the sick, then all is accomplished that is necessary for the protection of the public. There will always be a certain portion of the latter who will insist upon making fools of themselves, just as the laws against obtaining money fraudulently do not protect the community against the systematic operations of the gold-brick men. When the medical practice act restricts the legal registration to well qualified practitioners of medicine, and does not allow others to pass themselves off as physicians, then it has done all that the law is required to do. It has placed people in a position to protect themselves if they use reasonable care and diligence.

NEUROTIC SPINE.

This is the title given to an article in *Pediatrics* of November 15, 1899, by Henry Ling Taylor. He says there is no deformity characteristic of neurotic spine, and that it is not due to a lesion of the spinal column nor even to gross lesions of nervous structures, but rather to the patient's nutrition and morale. It is a functional disorder, sometimes responding readily to treatment, at others baffling the most skilful therapeutist. Neurotic spine is a weak back associated with certain local and general symptoms. The patient tires easily, and often is able to walk but short distances—sometimes not at all. The lower part of the back is painful, and there are usually distinct points of tenderness over certain spinous processes; such spots may be found just below the occiput, between the shoulders, and in the lumbar region. Pressure at these points may give rise to nausea.

We have quoted this author because under another name he has described a typical example of neurasthenia. We had supposed that neurology had carried us beyond the point of giving a name to every possible group of symptoms. In the description above given we are

at a loss to understand why the physician in describing the case selected the tenderness along the spine, or weak back as it is termed, as the cardinal symptom, unless it is the one about which the patient complained the most. It could as well have been labeled "neurotic ribs," or "neurotic shoulders," for the pain was over these parts; and the symptom of fatigue, the tire on slight exertion, seems to be set down in the clinical history as a mere incident.

A study of a considerable number of such cases shows that we have neurotic eyes, neurotic arms, neurotic legs, neurotic stomachs, and especially neurotic heads, the symptoms all varying according to the functions of the organ which is affected; but they all have this in common—they always become tired on slight exertion, either in the use of the particular organ or part affected, or general tire.

The term "neurotic spine," in the sense in which it is applied in this case, is simply working over old straw which gave us the terms spinal anemia, spinal congestion, and the interminable list of traumatic neuroses, which included traumatic hysteria, railway spine, and encephalasthenia.

Perhaps the pendulum has swung too far in the other direction, and we are now inclined to group under the term neurasthenia too many symptoms, but it is certainly the only thing that has proven to be a good clue in unraveling these pathologic puzzles.

TYPHOID SPINE AND TYPHOID SPONDYLITIS.

Some years ago the term typhoid spine was used extensively in this country to designate a group of symptoms largely functional in character and of neurotic origin. Osler made an extensive study of these cases and came to the conclusion that they were but subvarieties of neurasthenia. It seems that the nutritional disturbances following typhoid fever furnish a fruitful soil for the development of such symptoms. These patients complain of pain in the back, which is aggravated by movement; they are easily tired upon comparatively slight exertion. The pain in the back may be accompanied by hyperesthesia, but usually it is not. Occasionally there is subjective numbness of the lower extremities. The knee-jerks are usually normal, and there is rarely any loss of sensation.

Quincke recently described two cases of a new disease of the vertebræ which follows typhoid fever. It is confined to the lumbar and sacral segments of the column, and the process begins abruptly with fever, accompanied by violent pain in the lumbar and sacral regions. Swelling soon appears in these parts. The disorder is

accompanied by certain nervous symptoms; among these are changes in the reflexes, paresthesia, and possible vesical and rectal disturbance. The two cases reported by Quincke rapidly recovered. Another case has recently been added by Konitzer, in the *Mittheil. aus den Grenzgebiet. d. Med. u. Chir.*, Band iv, Heft 2. The patient was aged 25, and had been attacked with typhoid of apparently a severe type, lasting from the end of November until into January. The following February he had returned to his employment, but occasionally experienced pain in the back and legs. On March 11, while sneezing, he felt violent pains in the lower part of the spine and radiating down the legs. There was a subjective feeling of loss of strength in the lower extremities, though the leg and foot could be moved. The spine was exquisitely sensitive. The patellar reflexes, which early in the attack were normal, were increased later, and three weeks after the seizure had disappeared. As the patient recovered the knee-jerks returned and the pain disappeared. At the beginning of the attack the temperature was elevated, but it soon fell to normal. On April 4, over three weeks after the attack, there was a relapse, with an increase in spinal pain, but this disappeared under salicylate of sodium. Unlike Quincke's cases, in this case there was no swelling in the lumbar and sacral regions, but as he was not seen for the first six days of the disease it is possible that it was present and had disappeared.

THE DIDACTIC LECTURE.

Notwithstanding all that has been said in condemnation of the didactic lecture, it still holds its place as a medium of imparting medical instruction. Scarcely a score of years has passed since it was the only form of instruction provided in some medical schools. The anathema hurled at the unfortunate didactic lecture of old would seem to have given it its quietus. It is again brought forward by Osler in his address before the medical faculty of McGill University. He still holds out for the didactic lecture, claiming that there will always be men peculiarly fitted to it.

No one would question the value of Professor Osler's judgment on any question of medical education; he has had experience, and is of ripe judgment, but this assertion does not settle the question. Many criticisms leveled at the didactic lecture have been called forth by the feeling that it stood in the way of the application of clinical and laboratory instruction, both of which are of the utmost importance in fitting men for a medical career.

Another form of medical instruction that has been growing in favor is the recitation, but this is really only dividing the old-fashioned didactic lecture, which was usually accompanied by a "quiz." The didactic lecture will always retain its place in medical instruction, though it may be called by another name. The didactic lecture, pure and simple, is one devoid of illustration. Teachers vary in their capacity to use illustration. Some clinics, so-called, are in their very essence didactic lectures, even though there may be a sick person or two in the amphitheater. It is stated of one prominent clinical teacher that on more than one occasion, when material failed for the illustration of a particular kind of disease, it was not uncommon for any chronic case to be wheeled into the amphitheater to serve as a subject for the lecture.

The large amphitheater clinical lecture, given before from two hundred to five hundred students, can rarely be much more than a didactic lecture. Only a few of those sitting in the front row can see what is done or appreciate physical changes brought out by the lecture; to the balance of them it is simply didactic teaching.

MORTALITY STATISTICS OF THE TWELFTH CENSUS.

A circular letter under date of September 16 has been issued by W. A. King, chief statistician of the twelfth census, which sets forth a plan for a uniform certificate of death, and looks to a system of mortality registration national in extent. Many registration officers have given assurance that they would recast their local death certificate so as to embrace all of the census requirements, and put the same in use by the year 1900, which is the year set for the collection of mortality returns. Mr. King especially calls the attention of the medical fraternity to the matter, stating that upon them, more than upon any other agency, depends the ultimate success of the project. He believes that their active cooperation can be relied upon in a reform that promises such results. The form of death certificate is comparatively simple, and includes no more than that called for in the average death return by the local authorities. It is to be hoped that physicians and local health authorities everywhere will cooperate with the census bureau to the end that the published results of the next census may contain statistics which will be of some value in studying the causes of mortality in the United States.

ABSTRACTS.

MEDICINE.

A Transitory Hysterical Hemianopsia.—

Pierre Janet, in *La Presse Médicale* of October 25, 1899, describes a case of a woman 42 years of age who had been affected with hysteria since her sixteenth year. This was characterized by periodical seizures of anorexia, and occasional delirium and contraction of the extremities. In addition there was disturbance of micturition and variable anesthesia of the surface. Six months before coming under observation she complained of violent neuralgia in the face and a disturbance of locomotion due to certain contractures about the hip. There was anesthesia of the left hip, with diminution of sensibility of the skin about the eyes, a lessening of the acuteness of sensation of all the special senses, and a complete disappearance of the sensation of smell in the left nostril. Complete blindness existed in the left eye, which the patient stated had existed for more than ten years. When 27 years of age she had a nervous crisis, accompanied by pain in the head and temples. Some months later, in attempting to remove a foreign body from beneath the lid of the right eye, she noticed, much to her surprise, that the left eye was partly blind. This was stated by an optician to be due to atrophy of the optic nerve. This amaurosis did not disappear, but was accompanied by flashes of red light which would cause her to close her eye, notwithstanding that it was completely blind. These flashes disappeared in about twelve days, but were repeated later, lasting about seven days.

The right eye at the date of the examination presented nothing abnormal, the field of vision having the usual dimensions, and in the periphery of each the usual normal color reactions were obtained. A diagram of the visual field, as outlined at this time, is shown in Fig. 1.

Treatment was followed by rapid improvement in the contracted muscles, subsequent to suggestion and massage during the hypnotic state. This improvement was followed by a state of semidelirium, which the writer explains by assuming that the patient did not have sufficient nerve force to maintain all the functions of the body intact, and that when they were directed to one part they would disappear

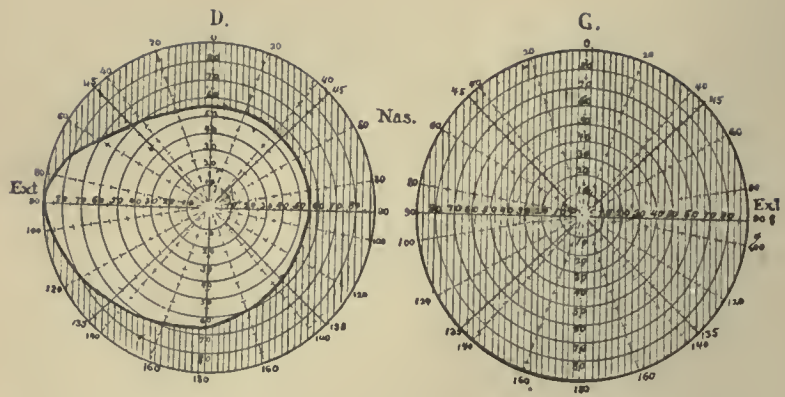

FIG. 1.

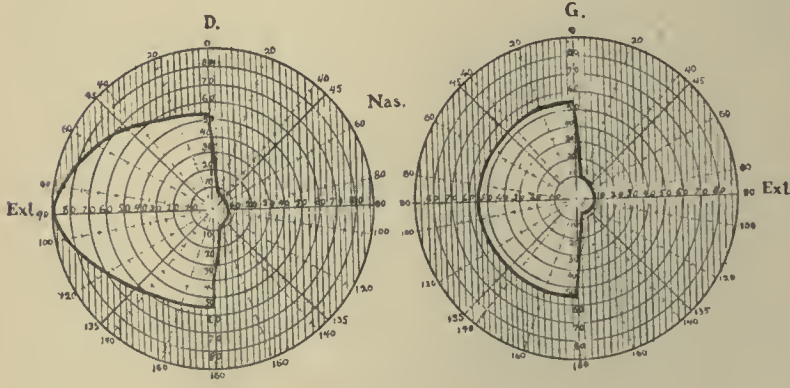

FIG. 2.

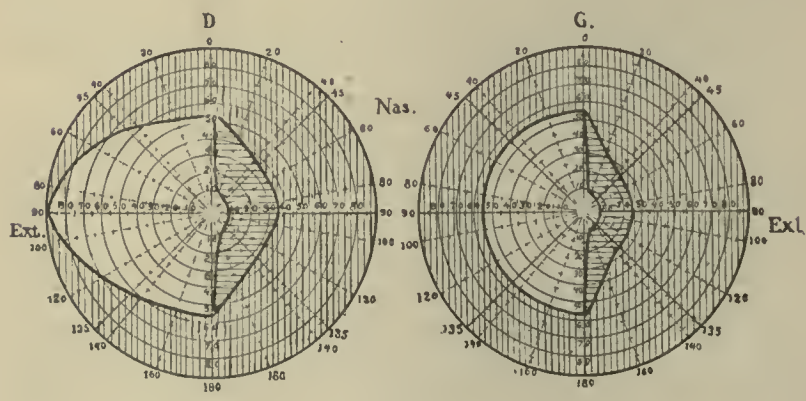

FIG. 3.

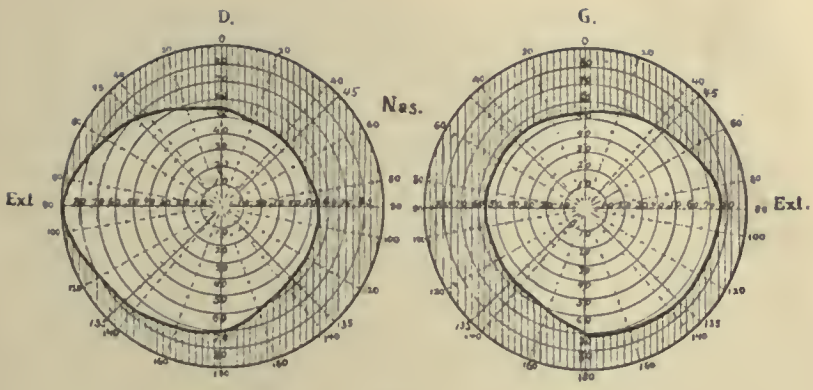

FIG. 4.

in another. To some extent this theory is borne out by his subsequent experience in restoring vision in the left eye. This was begun by light massage of the globe and directing the patient's attention to the eye. This was followed by a sense of pain in the eye, and a feeling as though it were enlarged. Much to the patient's surprise the vision returned in this eye, but with no great acuity. At the third séance vision had so far improved that she was able to recognize small objects near the eye. During one of these tests the patient complained that she saw only one-half the object, and upon opening the right eye, which hitherto had functionated normally, it was found that there was complete left homonymous hemianopsia. The fields at this time are shown in Fig. 2. This condition was of short duration and spontaneously reverted to the original blindness in the left and normal vision in the right. Suggestion again caused a return of the hemianopsia, and by forced attention it was found that the field of vision would pass the middle line. A chart obtained at this time gave the curious fields shown in Fig. 3.

These efforts were repeated from time to time, and several modifications of the visual fields were noted, similar to the foregoing. Ultimately the two fields of vision were restored, the left being only a little less than the normal extent; this is shown in Fig. 4.

It is believed that the restored vision will be of short duration and that the patient will relapse on slight cause.

Arrhythmical Hysterical Hemichorea.—

G. Carriere and Huyghes, in *La Presse Médicale* of October 4, 1899, describe the case of a young woman aged 22 years who was received in the hospital presenting marked involuntary movements

on the right side of the body. The family history was negative. The personal history gave no account of infectious diseases or rheumatism. Three years before the beginning of the trouble the patient suffered from influenza, but there were no complications. She had always been emotional and suffered from slight digestive disorders, but there was no alcoholism or syphilis. She had one child aged six months, who was strong and well. Three months before coming under observation she saw her father fall from a considerable height. Three days later involuntary movements began, which prevented her attending to her work, and somewhat later the movements extended to the right leg, with occasional fibrillary tremors of the face. The trunk remained free from movements, as did the diaphragm. The general health of the patient was not much impaired; there were no disorderly movements of the eyeballs. The movements were essentially choreic without disturbance of sensibility. All of the reflexes were present excepting that of the pharynx. There was no anesthesia or hyperesthesia. Strong pressure in the seventh intercostal space and under the breast produced considerable pain. Ovarian neuralgia was marked. The visual fields were normal on the left side, but somewhat diminished on the right. The right pupil was somewhat more dilated than the left. There was some pain due to the abnormal movements, but there was no inflammatory reaction. Insomnia was complete. There was no fever, disturbance of micturition, or defecation. The urine was normal. The authors discuss tremor, athetosis, paramyoclonus multiplex, and exclude them all on the ground that the movements were distinctly choreic in character. The chorea of Sydenham, which occasionally occurs on one side of the body, was thought to be excluded as this case occurred in an adult, that it was not accompanied by fever, cardiac disturbance, or chlorosis; also that the disease came on abruptly, whereas that of Sydenham as a rule develops gradually. The authors think that the diagnosis of hysterical hemichorea was fully confirmed by the results of treatment, which consisted in isolating the patient and administering pills of methylene blue, at the same time insisting on the efficacy and danger of this medication. In addition the patient was given a small quantity of chloroform, and just at the moment of relaxation, before consciousness was lost, suggestion was made that the movements would cease. The following morning the choreic movements in the lower extremity had disappeared, and those in the arm were much diminished. A week later a similar séance was followed by complete restoration.

Functional Diseases of the Heart.—

H. W. Jackson, in the *Boston Medical and Surgical Journal* of October 26, 1899, says that functional disturbances of the heart are sources of much greater worry to the patient than organic disease. He limits the use of the word functional to those disturbances in the action of the heart due to some unknown cause, and not accompanied by definite lesions. From a strict pathogenic standpoint the term should be limited to those cases due to faulty innervation, but clinically such a distiuction is unnecessary. The term organic disease should include not only cases of valvular disease, but all structural changes affecting any part of the heart. In reporting niuety-two cases of heart disease in the Boston City Hospital he classifies those in which no valvular lesion was found under the term parietal disease of the heart. These included forty-eight of the ninety-two cases. Of the remaining number, in thirty-nine cases there was valvular disease, and five were classified as functional.

As a general rule it may be said that a patient who complains of palpitation or pain in the heart has fuuctional rather than organic heart disease. Pain felt by a patient in the region of the heart is rarely an indication of structural disease. Organic disease may progress without any pain. Precordial pain is often due to affections of the stomach or of the neighboring nerves. The special pain of heart origin is angina pectoris characterized by paroxysmal recurrence, extreme distress, and sense of impending death, with coldness and arrest of respiration. Pain may occur in pericarditis and in inflammatory affections of the aorta. Palpitation, though common in heart disease, is still more so in dyspepsia and in emotioual conditions. Intermission and irregularities of the action of the heart felt by the patient are more frequently indications of nervous disturbance than of organic disease.

The Diagnosis of Aphasia.—

J. A. Caldwell, Jr., writing in the *Cincinnati Lancet-Clinic* of October 28, 1899, on speech and its disorders, gives the following classification of aphasia:

Sensory Aphasias: Word blindness — non-recognition of word meanings. Word deafness — non-recognition of word sounds. Visual apraxia — non-recognition of object meanings. Auditory apraxia—non-recognition of object sounds. Amusia—non-recognition of musical sounds.

Conduction Aphasias: Paraphasia verbalis — non-recollection of word sounds. Paragraphia — non-recollection of word meanings. Paranomia — non-recollection of names of objects.

Motor Aphasias: Psychic motor aphasia—spoken word construction loss. Executive motor aphasia—spoken word utterance loss. Psychic agraphia—written word construction loss. Executive agraphia—written word utterance loss.

It will be seen that in the above classification the two expressions, non-recognition and non-recollection, are extensively used. Ordinarily, by non-recollection we mean loss of memory, but when used in this sense the word is undoubtedly etymologically distorted. When we are unable to recollect a word it is gone from us only temporarily; and sense perception of the word will immediately recall it to our mind. By non-recognition is meant loss of memory; when we no longer remember a word it cannot be recalled, nor will we recognize it as correct when we hear it spoken or see it written. Many other classifications of aphasia have been proposed, but the one given seems to cover practically all our knowledge of the subject. An anatomico-pathological classification of cortical, transcortical, and subcortical is also used. Wyllie and Elder use, instead of these expressions, pictorial, suprapictorial, and infrapictorial.

For the differential diagnosis of aphasia Elder proposes the following list of questions:

1. Can the patient hear sounds of any kind?
2. Can the patient hear words spoken?
3. Can the patient understand words spoken?
4. Can the patient see objects of any kind?
5. Can the patient see words written or printed?
6. Can the patient understand words written or printed?
7. Can the patient speak voluntarily?
8. Can the patient repeat words?
9. Can the patient speak words read? (Can he read aloud?)
10. Can the patient write voluntarily?
11. Can the patient write to dictation?
12. Can the patient copy?

Gastric Ulcer in the Massachusetts General Hospital.—

R. B. Greenough and E. P. Joslin (*Boston Medical and Surgical Journal* of October 19, 1899) have studied the patients with this disease that have been admitted to the Massachusetts General Hospital in the decade 1888–1897. Out of 13,097 cases there were 187 cases of gastric ulcer, a percentage of 1.4. The frequency of various symptoms is given as follows: vomiting, 95.7 per cent; pain, 92.5; vomiting of blood, 78.6; pallor, 70.1; tenderness, 69.5; constipation, 65.8. It will thus be seen that vomiting is by far the

most constant symptom, and pain is the next. Late reports were obtained from 114 cases with average duration of about five years from the time of entering the hospital. At the time of discharge from the hospital, of the 187 cases, 121 were regarded cured, 34 were relieved, 15 died, and 17 were otherwise classified. Of the 114 cases reported five years later, 28 of the cured cases had relapsed, 8 were dead, and 27 had remained well. Of those that were discharged relieved, 10 recurred, 4 were dead, and 15 remained well. The general average of the figures shows that about 60 per cent failed to derive lasting cure from medical treatment. The starvation diet and rectal feeding were the therapeutic methods adopted in the more severe cases, and a milk diet was given as a rule in the milder cases, so that a comparison of the two forms of treatment can hardly be made with justice. The percentage of recoveries where the rectal feeding was the most popular is about the same as where milk diet was resorted to. The authors conclude that gastric ulcer is more frequent in Boston than it is in Chicago, Baltimore, or Denver. It is five times as common in women as in men. The average age in men is 37, that in women 27. Hemorrhage was present in 81 per cent of the cases; it caused the death of 18 per cent of the male patients, but only 1.27 per cent of the females. No woman under 30 died of gastric hemorrhage. The blood was that of a chlorotic type of anemia. Perforation occurred in 3.2 per cent of the cases, and none of these left the hospital alive. Of 114 cases, 80 per cent were discharged cured or relieved, but at the end of a period of five years only 40 per cent remained well. The mortality in the same time due to gastric disease was 20 per cent; among the males it was 30 per cent, and among the females 9 per cent. The excessive mortality among men, its occurrence in life a decade later than in women, and the absence of fatal hemorrhage in women, point to a difference of the ulcer in the two sexes. The mortality of 8 per cent and the failure in effecting a lasting cure in 60 per cent of the cases indicate the need of surgical intervention in other than emergency cases of this disease.

Massage in the Relief of Eye-strain in the Treatment of Glaucoma.—G. M. Gould, in the *Canadian Journal of Medicine and Surgery* for November, 1899, reports a number of cases in which there was marked relief in the correction of eye-strain in the treatment of glaucoma. In all cases of long standing which have been refracted, it has been noted that there was a decrease of the myopia. This tends to show that the pathogenic elongation of the eyeball by

increased tension is relieved by massage and that there is a certain degree of permanence in the cure. He agrees with Schoen, that glaucoma is not infrequently produced by eye-strain. Eye-strain is not the sole cause of glaucoma and cataract, but it is a far-reaching and potent cause of ocular disease. The vast majority of cases of glaucoma and cataract are preventable, and they will not arise if the eyes are properly cared for at an age when these diseases commonly develop. In cases where eyes are damaged by prolonged tension, massage will not overcome the structural changes; while the trouble is still functional, great improvement or recovery may be looked for.

The technique of massage is simple, but requires delicacy of touch and intelligence on the part of the operator. It is done by alternate palpation with two fingers resting on the closed lids; the movements employed are the same as those used in estimating tension, but are made slowly. Pressure should be slight at first and gradually increased. In some cases the pressure may be a trifle quicker, but never sudden. The amount of pressure is governed by the hardness of the globe; in high tension greater pressures are safe. As the tension decreases, the force exerted must be lessened. The patient's sense as to what is comfortable is a valuable guide in the application of the method. Palpation should be through the upper lid with the eyeball in the positions of extreme adduction and abduction, as well as with the eye looking forward, and extreme depression. In maximum elevation of the globe the lower lid is to be used. Each position must be ordered systematically while the massage is being carried on, the opposite eye serving as a guide. The length of each sitting is from three to five minutes, which is usually sufficient to bring about normal tension.

The Primary Lesion of Tuberculosis.—

W. H. Weaver, in the *New York Medical Journal* of October 7, 1899, says the usual location of the primary lesion of consumption in some portion of the lungs has influenced our ideas of the etiology of the disease and has led to the inference that it is caused by the inhalation of infected dust. The usual location of the primary lesion of tuberculosis in children under five years of age is in the bronchial lymph nodes or lungs. It is difficult to understand how the dust infection is so unfailing in its effort to get into the "dead air spaces," a term applied by Birch-Hirschfield to certain portions of the lungs in which the chest wall is somewhat cramped. In man intestinal infection is rare, considering the immense number of cases of pulmonary tuberculosis. That the lesion occurs primarily in the

lungs has led to the error of considering consumption a dust-borne disease. Milk, butter, cheese, and possibly meat or other infected foods, are emulsified during pancreatic digestion in the intestines, and the nutritious elements are carried directly through the lacteals without local infection. This chyle-containing bacillus, together with the lymph from the whole lymphatic system, is poured by the thoracic duct into the left innominate vein; thence with the venous blood through the right heart directly to the lungs, where infection takes place. When the germ enters the skin there is an abrasion, and a tuberculous ulcer forms. The same is true of a mucous membrane; it is probable that the germs are not absorbed by healthy mucous membrane. The dried germs are not necessarily virulent; if moist germs are inhaled, they find lodgment in the nose, mouth, or throat, and in these situations may be swallowed and thus be conveyed by the lacteals into the blood and the vena cava. Fine particles may be carried into the alveoli, but it is doubtful if moist particles can reach much beyond the larynx, where they would do little harm so long as the mucous membrane was intact. The frequency of infection in the posterior portion of the apex of the lung is directly related to the discharge of infected chyle into the vena cava. This, however, may not be the case, and infected areas and other parts of the lung may occur.

Lymphadenitis of the Retrotracheal Glands Simulating Aneurism.—

F. L. Classen, in the *Albany Medical Annals* for October, 1899, reports the case of a man aged 40, a letter-carrier by occupation, who came under observation in December, 1896, with a spasmodic cough which was thought to be whooping-cough. After some months a diagnosis of paralysis of the left vocal cord, due to pressure on the recurrent laryngeal nerve, was made. Several careful examinations of the heart and lungs revealed nothing abnormal; the sputum was negative. In April, 1899, the dyspnea had increased to where it was thought a tracheotomy might be necessary. An examination by the *x*-rays showed what was thought to be an aneurism of the ascending and descending aorta. This examination was made by Dr. F. H. Williams, of Boston, who has done so much chest work with the *x*-ray. The latter examination did not show the clinical symptoms of aneurism; there was no bruit, no tracheal tugging, no aneurismal pulsation, impulse, or visible tumor. The patient died May 10, 1899, of acute pulmonary edema.

Autopsy showed a practically normal larynx, intensely congested trachea, with small confluent areas of submucous hemor-

rhage. The aorta showed no dilatation at any point, but some degree of fatty atheroma. Behind the trachea, on a level with the aortic arch and situated to the left of the median line, was a bunch of enlarged glands about the size of a small orange. The individual glands varied in size from a pea to a diameter of three centimeters. They were firm, and on section showed a deeply pigmented central portion. The individual glands were bound together with firm bands of connective tissue. Dissection of this tumor showed that the left recurrent laryngeal and left pneumogastric were included in its structure. Staining revealed no microorganisms, but cultures showed a streptococcic septicemia and bronchopneumonia, with infection of the spleen and retrotracheal glands with the streptococcus pyogenes. The patient had luetic invasion twenty years before, but the anatomical appearances of the enlarged glands did not indicate a syphilitic process.

Lipemia in Diabetes Mellitus.—

T. B. Fletcher (*Journal of the American Medical Association*, Oct. 21, 1899) says a fatty condition of the blood has been repeatedly observed post mortem in diabetes. Less frequently the observation has been made during life, though probably it occurs more frequently than is generally supposed. He reports the case of a man aged 31 years who noted excessive thirst in February, 1899. This was accompanied by weakness, headaches, and occasional cramps in the legs. Weight was lost rapidly. February 15 he weighed 153 pounds, and on April 13 his weight had fallen to 118. On one occasion, before he was admitted to hospital, his urine measured over two gallons in the twenty-four hours. On admission the excretion of sugar varied from 142 to 235 grammes per day. A modified von Norden diet caused a decrease of one-half in the sugar elimination. This was still further reduced until the amount had fallen to 29.7 grammes and the quantity of urine had fallen to 1800 cubic centimeters. On April 13 a microscopic examination of fresh blood showed an enormous number of refractile granules, which varied considerably in size, from 2 μ to about 0.5 μ. These small masses were in active motion, and they so closely resembled bacteria that they were at first taken for them. On April 14 a small amount of blood was centrifugalized by means of the hematokrit, and the serum thus obtained was compared with that of a non-diabetic patient separated in the same way. By reflected light and by comparing the two tubes over a black background, the diabetic serum was found to be markedly turbid

and milky in appearauce. Subsequent examination of a larger quantity of blood, the application of various tests, and by staining with osmic acid, this turbidity was shown to be only partly composed of fat. It is thought that it may have been made up in part of albuminous particles. The non-diabetic diet was continued, and a month later he returned with no sugar in the urine and reporting a gain of ten pounds in weight. At this time an examination of the blood showed that there were uo more granules present than are found in healthy blood.

Diagnosis of Tubercular Peritonitis.—

A. E. Gallant, in the *American Journal of Obstetrics* for October, 1899, says that tubercular inflammation of the peritoneum is met with at all periods of life, but is most common in early adults. It is more common in women than in men. It is most frequently met with in women between the ages of 20 and 40 years, and has its origin in the pelvic peritoneum. Tubercular peritonitis may be secondary to the disease in other parts of the body, especially the meninges and pleura. The most distinct feature of the disease is a subnormal morning temperature which reaches normal in the afternoon and rises to a little above normal in the eveniug. There is hypogastric pain on pressure, on walking, and while urinating. A pelvic examination sometimes does not clear up the diagnosis, but if the abdomen is distended with fluid but little can be learned, and the patient is given much discomfort. In some cases a positive diagnosis is only possible by an exploratory incision. These cases should be treated by incision with evacuation of the fluid. Care should be taken not to break up intestinal adhesions. The abdominal cavity should be thoroughly irrigated with saline solutiou and closed without drainage. If the disease is in the pelvis alone, the removal of the focus of infection usually results in a permanent cure. If the fluid reaccumulates, the operation should be repeated. The presence of tubercular disease in other parts of the body does not contraindicate an operation.

Rheumatoid Arthritis in Chronic Diseases of the Middle Ear.—

R. A. Bayless, in the *Laryngoscope* for November, 1899, says much has been written on chronic non-suppurating disease of the middle ear, and great ingenuity has been employed in forming a nomenclature for the disease. It is generally thought that it begins in the mucous membrane lining the tympanum, which goes on to shrinking and atrophy with impaired movement of the ossicles. Most writers believe that the difficulty begins in a catarrhal disease

of the nasopharynx which extends to the middle ear, though some writers have thought that rheumatism may play a part in its production.

The writer was the resident medical officer of the Royal Mineral Water Hospital at Bath, and while in this service he was impressed with the fact that many patients afflicted with rheumatic arthritis were deaf. These patients gave no history of catarrhal trouble with the nose or throat. The onset of the deafness was slow, symmetrical in both ears, and in addition the patients were often afflicted with tinnitus. The loss of hearing was distinctly worse for the lower tones. Rinne's test was nearly always negative. The local appearances were not distinctive, the drumhead, as a rule, being somewhat thickened and indrawn. The Eustachian tubes were pervious. He points out that rheumatoid arthritis is a polyarticular affection, and there is no reason why the joints of the ear bones should escape, especially as cartilage forms an important part of these structures and is especially prone to undergo degeneration in rheumatoid arthritis.

The treatment of these cases is not usually successful; they are occasionally subject to moderately acute exacerbations, and these should be met by the administration of salicylate of sodium and other local applications, a blister behind the ear, and irrigation of the meatus with hot water. Massage of the drum, either pneumatic or by the use of the spring probe, is recommended. In cases which present no loss of bone conduction an operation upon the ossicles may be indicated.

Diabetes Among Railway Engineers.—

An editorial in the *Interstate Medical Journal* for November, 1899, states that one in twenty locomotive engineers have diabetes. We take it that the word diabetes here should be translated glycosuria. It is the belief of the writer that if the subject were still more closely investigated it would be found that the proportion is even greater than that named. It seems to affect the old engineer—that is, the one who has followed the vocation for some time. The disease is very much more frequent among engineers than those employed in other departments of the railway service. The writer finds that there is this peculiarity in the employment of the railway engineer: he sits upon a box with one leg extended over a foot-rest, while the lever is between the legs; his spinal column is constantly subject to the jars and jolts of the engine. This concussion is transmitted by the spinal column to the brain. Firemen are also subject

to the disease. It is believed that the trouble is caused frequently by cerebral irritation incident to the occupation. Not the least interesting fact surrounding the diabetes of the engineer is the ease with which it yields to treatment, when rest, diet, and codeine are used. A return to the employment always results in a reappearance of the sugar. The fatality of the affection among engineers is not great; many of them continue their employment from five to ten or more years, having all the time sugar in the urine, but with no special impairment of the general health.

Epidemic Throat Disease.—

E. V. Mock, in the *Laryngoscope* for November, 1899, has had occasion to observe a number of epidemics of throat disease which he has tried to associate with some cause not connected with the local trouble. These cases occurring in groups have led him to believe that the specific lesion was not in the throat. He is coming to regard them as mild forms of fevers in which there are throat complications, but without the appearance of the positive symptoms which would enable one to diagnosticate the constitutional disorder underlying them. He gives a brief account of thirteen cases among children, all of whom were associated either in school or in the family, constituting a small epidemic. The throats were all affected. In two of the cases showing only throat symptoms the "strawberry" tongue was marked. Two of the cases developed scarlet fever and ran a course of that disease.

The cases published by the writer, although it is to be regretted that they are not given more in detail, are interesting from the standpoint of the spread of scarlet fever. If we have larvated forms of this disease with throat involvement alone, there is a possibility of the infection being spread by these cases, although it is probable that they are not contagious in the same degree as those presenting the desquamative type of the disorder.

Mental Fatigue Due to School Work.—

A paper on this subject, taken from *Science*, appears in the *Sanitarian* for October, 1899. The varying results reached by the different investigators on fatigue among schoolchildren have been due to the fact that the method did not always identify fatigue. What a person does need not be a measure of what he could do. The question the writer proposes is, "Does the work of a school session fatigue the pupils mentally, make them really less able to do mental work than they were at its commencement, and, if so, to what

extent?'' The method employed was to give a number of scholars a certain test which would measure their ability to do mental work in the school session, and then to give the same test to different scholars of approximately equal general maturity late in the session. This obviated the effects of practice. The results of these experiments showed that whatever difference there was between early and late work was in favor of the latter, from which the author draws the conclusion that the mental work of the school day does not produce marked decrease in the ability to do further work.

The Effect of Atmospheric Changes on Chronically Inflamed Ears.—

Seymour Oppenheimer, in the *New York Medical Journal* of October 21, 1899, says that the ear, with chronic catarrhal defects, in at least 70 per cent of cases becomes worse under adverse weather conditions. The additional impairment due to the atmospheric changes is determined to a considerable extent by the location and character of the pathogenic process in the tympanic cavity. Hyperplasia is most easily influenced by barometric variations, while the purely atrophic changes of the middle ear are but slightly affected by variations in the weather. Atmospheric changes often unfavorably affect the catarrhal process in the upper respiratory tract and Eustachian tube.

SURGERY.

Surgical Anesthesia by the Injection of Cocaine in the Subarachnoid Space of the Lumbar Region.—

T. Tuffier, in *La Presse Médicale* of November 15, 1899, says that general anesthesia has contraindications in which the surgeon must resort to local anesthesia. He gives a *résumé* of the cases reported up to date. Of these, six were described by A. Bier. In each of these complete anesthesia of the lower extremities resulted, so that operations lasting a considerable time and of some severity were performed without causing pain. In a few of the cases reported by Bier the injection was followed by headache and nausea, which sometimes persisted for twenty-four hours. He observed no cardiac or pulmonary complications, from which he concludes that this method of anesthesia is especially indicated in diseases of these organs. Nearly the same experience was had by Seldowitch in four cases.

The same method has been carried out by Tuffier in the Hospital Lariboisiere upon five cases.

A man with a sarcoma of the pelvis which was inoperable, and suffering from severe pain which it was impossible to relieve by morphine, was given two centimeters of cocaine in the subarachnoid space at the level of the third lumbar vertebra. Anesthesia was complete in both legs, extending as high as the umbilicus, and lasted four hours; during this time there was no paralysis.

A woman of 44 years, suffering with sarcoma of the thigh, received an injection of three centigrammes of two-per-cent solution at the level of the second lumbar vertebra. Three minutes after there were fibrillary contractions in the right leg, and in four minutes the muscular sense was gone. The sense of contact remained, but that of pain was gone, the latter extending from the pelvis to the knee. After six minutes, anesthesia was complete from the breast downward. Eight minutes after injection the operation was begun. The dissection, which involved extensive resection of the muscles of the thigh, was accomplished without the slightest pain. Sensation returned one hour and ten minutes after the injection.

A man aged 37, with ankylosis of the tibio-tarsal joint, received an injection of one centigramme of cocaine dissolved in one gramme of water in the sacrolumbar space. Anesthesia extended to the knee in sixteen minutes. The bones of the foot were fractured and the tendo Achillis severed, without pain.

A child of six years, with tubercular synovitis of the knee, received an injection of one centigramme of cocaine dissolved in a gramme of water. In ten minutes analgesia of the lower extremities was complete, which extended as high as the umbilical region. The operation was accomplished without pain. There was headache, but no vomiting.

A woman of 24, with an ancient pelvic suppuration, was given an injection of two centigrammes of cocaine dissolved in two grammes of water in the space between the fourth and fifth lumbar vertebræ. In ten minutes anesthesia was complete as far as the umbilicus. A vaginal hysterectomy was performed in thirteen minutes, during which time the analgesia remained complete. When the uterus was drawn down, contraction was perceived by the patient. The application of the forceps did not cause pain. There was no headache, but there was vomiting after the operation.

The results of his observations and those so far published justify the author in concluding that subarachnoid injections of cocaine in the lumbar region are capable of rendering the lower extremities

completely anesthetic. The duration of this anesthesia will permit of surgical operations. The injections, when prudently managed, appear inoffensive, but they are only indicated where general anesthesia is dangerous. The indications, the dose, the vehicle for the anesthetic substance, remain to be determined; also the place of the injections. His own observations show that the lower extremities can be rendered insensitive by an injection of one centigramme of cocaine injected in the sacrolumbar space. This will also permit of a vaginal hysterectomy, but it is negative in abdominal operations.

An Application for Varicose Ulcers.—

F. E. Bunts, in the *Cleveland Medical Journal* for October, 1899, refers to a new method of local treatment of varicose ulcers, especially applicable to the so-called irritable ulcers. It is especially to be commended where operation is not performed. It consists of the use of iron ore as a dusting powder. He was led to make use of it in surgical dressings by observing the rapid and favorable progress in injuries to those working on iron ore docks. It is almost impossible to free ulcerated wounds from iron ore dust, yet he has never observed that its presence interfered in any way with recovery; in fact the reverse has been true, and the rapidity of repair and unusual absence of suppuration have led him to experiment with the substance. His observations have covered a period of ten years, and include nearly 1500 cases of injuries among this class of laborers. These observations led him to employ iron ore as a dusting powder in a variety of incised and ulcerated wounds and as a dressing for granulating surfaces. The ore selected was of the red, granular variety. This was pulverized and then sterilized in test-tubes by dry heat. It does not respond to the ordinary bacteriological tests of an antiseptic, but it forms an excellent protection to the skin and is difficult of removal. He has employed it with bichloride of mercury, dusting the granulating surfaces with sterile powder, and over this applying gauze wrung out of a 1-to-8000 solution of sublimate. It should not be used in injuries about the face, as it may stain the skin and leave permanent discoloration. Striking benefit is obtained from its use in varicose eczema. In the common form of indolent varicose ulcer temporary improvement has been noted, but as is usual with that class of cases recovery has been slow. In a number of cases of irritable ulcer the benefit derived from the powder was unquestioned. The relief of pain and the improvement of the appearance of the ulcer justify the author in recommending a trial of iron ore in this class of cases.

Subphrenic Abscess.—

P. Le Breton, in the *Buffalo Medical Journal* for November, 1899, says that subphrenic or subdiaphragmatic abscess resembles appendicitis. Formerly subphrenic abscess was recognized only in an autopsy, but now it is searched for clinically. Leyden was the first to call the attention of the profession directly to the affection, which was thoroughly illustrated by Maydl's monograph in 1894. From the standpoint of diagnosis subphrenic abscess is an interesting topic. It is never a primary condition —always secondary to traumatism or disease elsewhere. The most frequent cause is rupture of a gastric or tubal ulcer. This was found to be the cause in thirty-five out of seventy-nine of Maydl's cases. The next most frequent cause is appendicitis, the infection being by continuity or through the lymphatics. This abscess is most frequently found on the left side in males, owing to the fact that ulcer of the duodenum occurs most frequently in the male sex. The greater frequency of ulcer of the stomach in females often locates the abscess in the left fossa. Gas is often found in these abscesses, due to the communication with the hollow viscera. A leucocytosis is regularly present. A differential point in the diagnosis is the presence or absence of pulmonary symptoms early in the affection, or a history indicating inflammation of one of the abdominal organs. Pain over the lower ribs, radiating to the shoulder, is a symptom sometimes associated with attacks of singultus. In subphrenic abscess the area of dulness is dome-shaped, corresponding to the convexity of the diaphragm. Beginning at the third or fourth rib in the mammary line, it rises as high as the sixth rib in the axilla, and then gradually descends posteriorly toward the spine. In empyema the concavity of the dulness is upward. The prognosis is fair in subphrenic abscess, when surgical intervention is early and thorough. Delay allows the pus to burrow into the pleural cavity, lungs, stomach, or peritoneum, or the patient succumbs to sepsis. Treatment is similar to that of empyema: a resection of a part of the eighth, ninth, or tenth ribs in the middle axillary line, incision of the diaphragm with evacuation of the contents of the abscess, and drainage through one or two tubes.

The Choice of Operation for Stone.—

J. H. Brinton, in the *Therapeutic Gazette* of October 15 and November 15, 1899, says in reference to suprapubic cystotomy that while it is an old operation, for years it had fallen into disuse, only to be revived and to become one of the most frequently employed methods in opening the bladder. He advises the Trendelenburg

position, which favors the ascent of the intestines and puts the upper vesical fold of the peritoneum upon the stretch. This puts the peritoneum out of danger. This position is still further favored by the inflated rubber bag in the rectum. The incision into the bladder should be from three-fourths to one inch in length; if the calculus is large, it may be necessary to extend the incision. A rubber drainage-tube of one-fourth of an inch in diameter prevents infiltration. The fistulous opening of the bladder may be maintained in cases where there is a tendency to the reformation of stone, or in which it is impossible for urine to pass by the urethra. The dangers of the operation are slight, and the shock is scarcely perceptible; those conditions alone threaten the patient which are due to pathologic changes in the kidneys and other organs. An especial recommendation of the suprapubic operation is the ease with which it is performed and the thoroughness with which the bladder is emptied and explored. Drainage is always efficient, obstruction is rendered innocuous. The constitutional involvement is but slight; there is little danger of shock or septic poison. The after-treatment is satisfactory, and convalescence is speedy.

The comparative dangers of perineal lithotomy are contrasted in favor of the suprapubic incision. The perineal incision has always been regarded as the last resort, and submitted to by the patient with full knowledge of the possible chances of a bad result. It is always to be regarded as a major operation, because of the shock, hemorrhage, and the danger of infection. The single advantage claimed for perineal section is that of dependent drainage. This is largely hypothetical, and does not compensate for the greater risk attending the operation.

Litholapaxy is a proper operation in small or soft stone where there is a reasonable assurance that the urinary organs and prostate glands are not seriously diseased, and where a constitutional condition exists which is fair. When the opposite of this condition prevails, especially when the middle lobe of the prostate gland is enlarged, then suprapubic incision and drainage is the operation of election.

Necessity of Postoperative Treatment of Clubfoot.—

R. T. Taylor, in the *Maryland Medical Journal* of December 2, 1899, says that all cases of true congenital talipes equino-varus relapse if they are not mechanically fixed in an overcorrected position after operation. In three cases in which the deformity returned after operation, a simple tenotomy did not admit of the

foot being placed in the correct position, and Phelps's operation was performed. In none of five cases, however, in which the deformity was very great, was it necessary to perform osteotomy. In these cases division of the soft parts was sufficient. After operation a plaster bandage was kept on the foot for a period of a month or six weeks. This is followed by the Taylor ambulatory clubfoot shoe, which is so constructed that the foot is kept in an over-corrected position with the weight of the body on the inner side of the foot. These braces are worn until all tendency to relapse is past. A surgeon conversant with the anatomy of the foot and the pathology of congenital talipes can correct the deformity, but the work is worse than useless if the condition is not maintained by a suitable brace for months. In the construction of such a brace pressure must be upon three points: at the metatarsophalangeal articulation of the great toe; at the inner side of the heel; and at the calcaneo-cuboid articulation on the outer side of the foot. There should be a stop-joint at the ankle to prevent the equinus position. To prevent supination of the foot, the inner side of the brace and shoe must be lower than the outer. Mutilating operations to the bony framework of the foot, such as the removal of the astragalus, cannot be too highly condemned as contrary to the best interests of the patient.

Appendicitis.—

M. H. Richardson, in the *American Journal of the Medical Sciences* for December, 1899, discusses the operative treatment of this disorder under two heads. The first question proposed is: 'Should every case be operated upon as soon as the diagnosis is made?" He says the rule should be to remove the appendix if the diagnosis is made in the first few hours of the attack. After several hours have passed an operation is to be advised if symptoms are severe, or if they continue to grow worse. Operation is also to be performed in cases where there is a recurrence, severe symptoms setting in after a distinct remission in the attack. It is also to be advised in cases with moderate symptoms which do not improve. Operation is not indicated in extensive peritonitis which is localized and when the patient is improving; also in cases in which the condition of the patient is critical, and in which the slightest shock would seriously jeopardize recovery.

In operations the appendix should not be removed where there is a localized abscess with firm walls, and when the patient's strength does not permit of prolonged search for the organ. In

all cases in which the peritoneal cavity is opened, it should be removed unless the patient's condition forbids. The appendix should be removed in all cases after the inflammatory process has subsided—that is, in from two to three months after the attack. In cases which have been drained only the cicatrix should be excised, the appendix removed, and the wound securely sutured.

The Clinical Experimental Study of Splenectomy.—

Jonnesco, in a paper before the French Surgical Association (*La Presse Médicale*, Nov. 4, 1899), says that since 1896 he has performed twenty-nine extirpations of the spleen. Twenty-eight were for enlarged spleen due to malaria, and one to hydatid cystitis. There were nineteen recoveries and ten deaths. The age of those operated on had very little influence on the results and varied between 40 and 62 years. The volume of the spleen varied from 850 grammes to five kilogrammes, and seemed to exercise no influence upon the result. The spleen was movable in seven cases and fixed in twenty-two. Extensive adhesions were found in five cases. In three cases the pleura was opened and sutured. The most frequent complication after operation was intense pulmonary congestion; this occurred in seven cases, among which there were three recoveries and four deaths. Secondary hemorrhage was noted in two cases; hemothorax in one case, due to opening the pleura; generalized peritonitis in one case; suppurating peritonitis in one case. To avoid interference with the spleen in those cases in which there were extensive adhesions (in which operation is grave), he has sought to obtain an abolition of the normal functions of spleen by atrophy due to ligature of its pedicle. This has resulted in a suppression of the functions of the organ, while the adhesions of the abdominal walls have been sufficient to maintain the vegetative life of the organ.

The Operation for Carcinoma Uteri.—

Howard Kelly, before the Johns Hopkins Hospital Medical Society (*Johns Hopkins Hospital Bulletin*, October, 1899), said that there has been a return to favor of the vaginal route for operations in this form of cancer. The operation, however, will be performed differently from what it was when first advocated fifteen years ago. In that operation the uterus was, so to speak, shelled out from its investing sheaths so as to avoid the wounding of the ureters. Such an operation always left a portion of the infected tissue behind. To avoid this the abdominal route was chosen. Inferences were drawn

from the results obtained in operations upon cancer of the breast, and it was concluded that better results would be obtained if the pelvic glands were removed at the same time that the uterus was taken out. A painstaking examination of these cases showed that the conclusions applicable to breast cancer did not obtain in the uterine variety. The disease in these cases extended directly up from the cervix, the glands being involved only in the late stages or in cases that were not operable. These reasons have led Dr. Kelly to return to the vaginal operation, which is performed in a new way: an incision is made, and the removal is accomplished from above downward. Bougies are placed in the ureters to act as guides.

Pathogenesis of Appendicitis.—

A. O. J. Kelly, in the *Philadelphia Medical Journal* of November 11, 1899, has studied, during the fourteen months preceding January, 1899, 460 appendices. The routine examination was applied to each appendix, and consisted in weighing it, photographing it, measuring its length, its exterior diameter, the thickness of its wall, and the diameter of its lumen throughout its extent. It was then hardened, embedded, cut, and stained, taking sections from at least three parts of the appendix and studying their microscopic appearances. There were also bacteriological investigations of the contents of its lumen, of the exudate on the peritoneal surface, and the free pus in the peritoneal cavity.

In consonance with clinical observation, pathologically, two forms of inflammation may be distinguished—acute and chronic appendicitis. Acute appendicitis is divided into: (1) catarrhal, with subvarieties of simple, purulent, and hemorrhagic; (2) interstitial; (3) ulcerative, subdivided as non-perforative and perforative; (4) gangrenous. Chronic appendicitis is divided into: (1) catarrhal; (2) interstitial; (3) obliterating. Clinically these different varieties of appendicitis cannot always be distinguished.

Surgical Injuries to the Ureters.—

B. MacMonagle, in the *American Journal of the Medical Sciences* for December, 1899, gives the following directions as to what should be done in cases of injuries to the ureters. In extensive operations on the pelvic and abdominal viscera, these important structures are not infrequently injured. Most commonly they are involved in vaginal hysterectomies. Special precautions during the operations may prevent their involvement. The communication of the ureters

with the uterus is to be repaired only after the urine has been rendered aseptic. Fistulous openings into the vagina should be repaired at their lower opening. In case this fails an extra-peritoneal operation should be performed and the ureter implanted into the bladder. Injuries occurring in the course of abdominal operations should be met by anastomosis or implantation. If the condition of the patient is low, the opening may be united with the skin, which is to be regarded as only a temporary expedient. Tying the end of the ureter in the hope of causing atrophy of the kidney is not advisable. Nephrectomy should only be practiced as a last resort. The results of the different methods of uretero-anastomosis and bladder implantation have been about equally successful.

The Surgical Treatment of Perforation of the Bowel in Typhoid Fever.—

W. W. Keen, in the *Philadelphia Medical Journal* of November 4, 1899, gives the following conclusions on the operative treatment of typhoid fever perforations: (1) If it be possible to determine the existence of the preperforative stage, exploratory operation should be done under cocaine anesthesia, before perforation, shock, and sepsis have occurred. (2) After perforation has occurred operation should be done at the earliest possible moment. (3) That we wait till the primary shock, if any be present, has subsided. (4) In a case of suspected but doubtful perforation a small exploratory opening should be made under cocaine to determine the existence of a perforation, and if hospital facilities for a blood-count and for immediate bacteriological observation exist, their aid should be invoked. (5) The operation should be done quickly but thoroughly, and in accordance with the technique already indicated. (6) The profession at large must be aroused to the possibility of a cure in nearly if not quite one-third of the cases of perforation, provided speedy surgical aid is invoked.

Chronic Frontal Empyema.—

In the section of laryngology and otology, at the last meeting of the British Medical Association, there was a discussion on the diagnosis and treatment of chronic frontal empyema (*The Laryngoscope*, November, 1899). Earnest Waggett said that acute frontal empyema nearly always ended in spontaneous recovery. With general involvement of the accessory sinuses the frontal is the first to recover. The normal opening of this sinus is so situated as to favor drainage. When the disease becomes chronic it is presumptive

evidence that the opening is abnormal and that drainage is inefficient, or that caries or polypus is present, all of which are incurable by irrigation. The external operation is safer and easier than any performed through the nose.

Sargent Snow believed that intranasal drainage was the best method of dealing with these cases. In a number he had found it easy to connect ethmoidal and frontal sinuses by operating through the nose.

In making the external operation, Herbert Tilley said the skin incision should be under the inner third of the line of the eyebrow, carried downward to just above the internal palpebral ligament. Before commencing the operation the postnasal space should be plugged with a sponge. The anterior wall of the sinus should be freely removed, that the parts may fall in well and obliterate the cavity. An opening large enough to admit the tip of the index-finger should be made into the nose. The sinus should be well curetted and swabbed out with a strong antiseptic solution such as zinc chloride, forty grains to the ounce. The external wound should be closed at once and pressure by means of an antiseptic dressing applied. A drainage-tube should be introduced in the frontonasal passage.

Osteotomy.—

De Forrest Willard, in the *Journal of the American Medical Association* of October 28, 1899, says that this operation is simple and productive of most excellent results. He thinks it is too little appreciated by general practitioners and even by surgeons. It is applicable to a great variety of conditions. It has a wide application in deformities following fractures, ankylosis of joints, and distortions of bones produced by rickets and softening. He has long since abandoned the wedge-shaped osteotomy, as it is followed by a greater injury to the tissues and suppuration is more common. Instead of removing a wedge-shaped piece of bone, it is better to let nature fill the convexity with new bone. He has never observed suppuration since abandoning the wedge-shaped method. This method compared with osteoclasis has much to recommend it, as the latter contuses and lacerates soft tissues to a great degree. The best fixation method after osteotomy is a plaster-of-Paris dressing.

Movement in the Treatment of Articular Disease.—

Lucas Championnière, in *La Presse Médicale* of November 4, 1899, says the therapeutics of articular disease is dominated by the

doctrine of immobilization. It has become almost a dogma that rest is the best treatment for inflamed joints. He admits that it has its uses in diseases of the articulations, but it is pernicious in joints that are healthy. It forms an obstacle in bone nutrition. The persistence of movement is indispensable to a proper return of function. In fractures of the lower end of the humerus better results were obtained with methodical movements. The only contraindication to the use of movements in inflamed joints is pain. This of necessity requires that there should be a certain amount of rest, but with it certain movements should be made, to preserve so far as possible the integrity of the joint function.

THERAPEUTICS.

Mercurol in Gonorrhea.—

F. Fraley, Jr., in the *Therapeutic Gazette* of November 15, 1899, refers to the value of mercurol in this affection. Some time ago we described this new antiseptic compound, which is an organic salt of mercury containing about ten per cent of the metal. It is freely soluble in water and has a slightly alkaline reaction. The daily local application to an inflamed mucous membrane is one which will be useful and increase the resisting power of the cells. Heretofore no such remedy has been found. Those most usually employed are potassium permanganate and nitrate of silver. While they are antiseptic, they are irritating.

In the treatment of these cases one-half per cent of mercurol in normal salt solution was used. In some cases in which there was a tendency for the disease to become chronic a one-per-cent solution was used, and in one or two cases this was increased to two per cent. The latter solution does not produce any inflammation of the tissues and is as strong as should ever be used. Of the fourteen cases which were under observation for a considerable time, six were cured, three nearly so, and three improved; two were not changed in any way, the condition being somewhat worse when the mercurol was discontinued. The average duration in those cured was twenty-six days. The effect of mercurol on the urinary symptoms was prompt, there being complete relief in all but the two cases reported as failures, and these it relieved in the original condition, but failed in the relapse. The best results were reached in simple anterior urethritis, and in the cases of short duration or of comparatively long duration. In the cases where the posterior urethra was

involved the results were not so good. Many of the cases of posterior urethritis were treated by irrigations of potassium permanganate, which the writer regards as the preferable drug for irrigations, while mercurol is best for injections.

Iodide of Potassium in the Treatment of Acne.—

F. J. Leviseur, in the *Medical Record* of November 11, 1899, says it seems paradoxical to claim that iodide of potassium internally is useful in acne vulgaris, as the drug itself produces an irritation closely resembling that disorder. Practical observation refutes this reasoning and indicates that this drug is of use in the treatment of obstinate cases.

A case described is that of a girl 18 years of age, who had been affected with acne of the face for a year and a half. It began with the formation of pustules around the nose that gradually extended to the forehead and chin. Several tumors appeared, varying in size and protruding well above the surface of the skin and having a bluish-red color. Here and there a number of ordinary acne pustules were interspersed, and several scars were noticed, marking the site of lesions which had been opened and emptied. Five grains of iodide of potassium, taken with water three times a day, was given; it produced a slight attack of iodism. On the third day the skin presented a decided change. All the larger tumors showed increased redness, swelling, and pain on pressure. In addition four small nodules deeply embedded in the skin appeared. The iodide was then stopped and the face treated locally. At the end of the second week there was marked improvement, and the iodide was again given. The local reaction in the skin was not so marked as when the iodide was given the first time. After the inflammatory action was well advanced the iodide was again discontinued and local treatment adopted. After this second course the skin was entirely healed.

In treating cases of this disease with the iodides it is well to have them report every day or two, that the reaction may be carefully watched, as it is necessary to stop them as soon as inflammatory changes are set up.

A Substitute for Poultices.—

W. I. Wilbert, in the *Montreal Medical Journal* for November, 1899, says that a mixture of kaolin and glycerin is an excellent substitute for poultices. A mixture of this kind has been extensively advertised in the western part of the United States, under the trade-

mark name "antiphlogistine." The reports of the physicians who have used the preparation show that the claims made by the manufacturers of this article are reliable, and that the substance is an important addition to our means of external application. It may be used in all cases where a poultice is indicated, and has the advantage of being readily applied without boiling or other preparation. It need not be removed frequently, and it gives almost immediate relief from pain in most cases of acute or chronic inflammation. It is an excellent substitute for ointments and cerates, for it is not greasy or dirty, and can be readily removed with cold water. It can be combined with drugs such as iodine, the iodides, iodoform, ichthyol, and other remedies used in the local treatment of disease. The manufacturers of the trade-mark article give an elaborate formula, but the first and last components are the only ones of importance, namely, the kaolin and glycerin. A working formula for the preparation of the substance is as follows:

℞ Kaolin	1000
Glycerin	1000
Oil of peppermint	1
Oil of wintergreen	1
Oil of eucalyptus	2
Boric acid	100

The kaolin is passed through a No. 60 sieve and sterilized at a temperature of 160° C. for an hour or more. Then the glycerin is added and the heat continued for thirty or forty minutes, stirring the mass occasionally with a spatula until it is smooth and creamy. When nearly cool the boric acid and flavoring extracts are added. It should be preserved in tin or glass boxes to prevent the absorption of moisture from the atmosphere.

Therapeutics of Codeine.—

George J. Lochbochler, in the *Journal of the American Medical Association* of December 2, 1899, says that codeine has been employed since its discovery in 1882 for the relief of pain, but it did not come into general use until influenza became one of the regular recurring epidemics. The drug may be safely given in from two- to six-grain doses, based on the assumption that its narcotic powers are one-fourth those of morphine. In most cases these doses are too large; it is rarely necessary to exceed one-half grain, while a sixteenth often obtains favorable results. It should be repeated oftener than morphine, which can be done safely. There is no danger of producing a drug habit. As compared with morphine, the sedative and hypnotic effects are greater, while the narcotic effects are less.

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Codeine can be combined with the coal-tar products in relieving the severe cough of bronchitis. It is the best succedaneum for opium. It is exceedingly valuable in the cough of phthisis, as it does not impair the appetite or digestion, and may be employed for months. The drug is recommended in diabetes by the leading writers, which include Tyson, Hare, Osler, Anders, and Strumpell. Schmidt has found codeine useful in the treatment of the morphine habit. It modifies the symptoms attending the withdrawal of morphine, and does not prolong the treatment.

Codeine has no cumulative effect, and while it is toxic, poisonous symptoms are rarely caused by the drug. Intoxication with the drug causes restlessness, irritation of the cutaneous surface, spasms of the muscular system, and general dilatation of the pupils. No fatal case of codeine poisoning has been reported.

A New Solution of Iodine for Local Application.—

Charles A. Elsberg, in the *Philadelphia Medical Journal* of November 4, 1899, speaks highly of iodine as a local application in certain conditions. It has been shown that a definite portion of the iodine is absorbed by the skin. The efficacy depends largely upon the strength. The ordinary tincture contains but seven per cent, though alcohol will absorb ten per cent. Many practitioners apply a weak solution of the remedy, too little to be efficient. The alcoholic solution spreads over a large area of skin, and thus its local effects are impaired. He recommends a solution of iodine:

Alcohol	40.0
Ether	40.0
Iodine	20.0

This dries rapidly as it is painted on the skin, and is of such strength that only one or at most two coats need be applied. The rapid evaporation of this mixture prevents it spreading. The lotion, if covered with a piece of gauze, will blister. The writer has found this solution to be valuable in subacute and chronic synovitis, and in the hydroceles which occur in young boys. It is also useful in cervical adenitis. He has seen glands of considerable size which resisted other treatment yield to the local use of iodine. It is often difficult, if not impossible, to distinguish between tubercular and chronic inflammations of the cervical glands. If after local application the glands decrease in size, it is probable that they are not tuberculous. He has never noticed iodine poisoning to occur from the external application of this solution, and in only one case was an iodine reaction obtained from the urine.

Urotropin in Genito-urinary Disease.—

J. M. Thompson, in the *Boston Medical and Surgical Journal* of November 16, 1899, says that urotropin does not act in the bladder by killing microorganisms, but prevents their growth; hence it is not a true germicide, but a sterilizer and antiseptic. Foul-smelling and alkaline urine becomes acid under its use. This action would lead one to infer that formaldehyde was separated from urotropin after it passed into the bladder. It is the best remedy when there is a pathologic process at work at the neck of the bladder, with or without hypertrophied prostate. It is especially valuable in chronic seminal vesiculitis. His observations with the drug comprise sixty-seven cases of genito-urinary disease, the most of them having chronic troubles. The dose was generally seven and a half grains morning and evening; in severe cases a third dose of the same amount was administered at noontime. He describes two cases: one a patient 64 years of age, and the other 57, with enlarged prostates. Both had been obliged to use a catheter for years, except at times when the symptoms abated. During these intervals the urine appeared normal beyond the presence of small flocculi and comma-shaped threads. When catheterization became necessary the urine always changed in appearance, and became alkaline and of strong odor. In both of these cases the use of urotropin was gratifying. The subjective symptoms all disappeared, and the necessity for using the catheter vanished.

Peptones in Typhoid Fever.—

Fred Fenton (*Canadian Practitioner and Review*, November, 1899) read a paper before the Toronto Clinical Society and reported the results of this plan of treatment in two cases. One was a man about 21 years of age, who had passed through an attack of typhoid which was followed by relapse. There was high temperature, low muttering delirium, and uncontrollable vomiting. The pulse was almost imperceptible. As swallowing was difficult, it was decided to feed the patient per rectum. The whites of ten hard-boiled eggs were finely minced, mixed with milk, and peptonized. This was administered every twenty-four hours—a pint every four hours. No nourishment was given by the mouth for nine days, and during this time the patient gained in flesh. In another case, a boy of 11 years, it was impossible to get the patient to take more than a few ounces of milk a day. There was consolidation of the base of the right lung with attacks of cyanosis. The nutrient enemata were employed in this case, after the administration of which the cyano-

sis disappeared and there was improvement in the general condition. In the last case, both the whites and the yolks of the eggs were used in preparing the mixture. Pepsin and hydrochloric acid were used in the first case to peptonize the mixture, but in the second pancreatin was used. It was found that the pepsin and hydrochloric acid mixture was better borne by the rectum than the pancreatin.

Poehl's Spermin in Severe Neurasthenia.—

The *Therapist* of November 15, 1899, contains a translation of an article by Max Salamon. He says that Poehl's spermin has an important place among therapeutic remedies; there is a scientific basis for its employment. Spermin is found in the prostate gland, ovaries, pancreas, thyroid, and spine, as well as in the blood; hence the inference that it is a substance of physiological importance. It is said that its virtues depend upon the power which it has of assisting oxidation; this is shown by careful quantitative examination of the urinary solids during its administration. It increases normal alkalinity of the blood. Spermin is the only substance which increases leucocytosis and at the same time heightens the alkalinity. It is indicated in all cases of decreased alkalinity of the blood. The principal diseased conditions in which it is of benefit are anemia, tuberculosis, convalescence from typhoid, marasmus, and disease of the skin. In anemia it may be combined with iron. It is indicated in the nutritional disturbances commonly grouped under uric acid, scurvy, diabetes, and rickets. Excellent results have been obtained from its employment in neurasthenia.

The Nutritive Value of Albumose-Peptone.—

A. E. Austin, in the *Boston Medical and Surgical Journal* of November 30, 1899, says that the term peptone has been used to represent the digestive products of albumin without separation of the albumoses. Practically all peptones on the market, including somatose, are a mixture of peptone and albumose in varying proportions. Pure peptone is never seen except in laboratories. There is no good reason for separating albumose from the peptone, as the former is absorbed quite as well as the latter. The writer then gives the results of some experiments upon feeding with albumose-peptone, from which he concludes that peptone is not only able to replace native albumin as a means of checking nitrogenous loss, but there may, under this diet, be a gain of albuminous tissue. Continuous administration for a period of twenty-five consecutive days causes no diarrhea or disturbance of the stomach.

Stretching the Nerve for Sciatica.—

A. B. Strong, in the *Chicago Medical Recorder* for November, 1899, says that for twenty years or more he has employed this simple procedure, which in his hands has given the utmost satisfaction. The relief of pain in these cases is prompt and a permanent cure is often secured. The procedure is as follows: Lay the patient flat on the back, with the limbs extended. Place one hand over the knee of the affected side so as to keep the leg straight. With the other hand grasp the foot, and slowly, with frequent rests, bring the whole leg upward to a position at right angles with the body. Ten or fifteen minutes should be employed in the maneuver, and the leg should be held in this position for a time. Considerable pain, tingling, and numbness accompanies the procedure. The leg is to be brought down, and after a few minutes the movement is repeated. The treatment is repeated at intervals of a few days.

Urotropin in Posterior Urethritis.—

Gerald Dalton, in the *Therapist* of October 16, 1899, says that urotropin is one of the most valuable urinary antiseptics as a remedy in cystitis. It acts as a uric acid solvent, but it meets one of its most important indications in the treatment of posterior urethritis. He reports five cases in which decided benefit was obtained with the drug alone, local and other treatments having improved matters to a certain point and then apparently ceased, a state of things only too common in the cure of this troublesome complaint. In two cases in which but little relief was obtained, the patients neglected the treatment and coutinued the use of alcohol in excess. In several of the cases still under observation a complete cure has not been obtained, but in no case was the drug without a favorable influence upon the progress of the disease.

Treatment of Suppurating Bubo.—

H. A. Roister describes a comparatively new treatment for suppurating bubo. The surface is carefully cleansed, and over the softest portion an incision of one-half inch is made. The pus is evacuated and the cavity injected repeatedly with peroxide of hydrogen until no effervescence is produced. The parts are then carefully dried and an ointment containing 20 per cent of iodoform is liquefied by heat and injected into the cavity. It soon hardens. An antiseptic dressing is then applied. The claims made for this treatment are that it causes but little general disturbance and the patient is not confined to bed.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Rickets.—

A recent editorial in the *Archives of Pediatrics* for October, 1899, says that this disease is increasing in frequency in this country. That it is not so frequently overlooked as it was in former years does not explain the increasing number of cases seen both in city and country. Nearly 80 per cent of the children under two years of age, of the poorer classes of Boston and adjacent cities, have rickets. It is a disease of the temperate zone, being almost unknown in Sweden, Denmark, and the arctic regions, and it is very rare in tropical countries. In the northern cities of the United States it occurs among every nationality, but is most common among Italians and negroes. Its occurrence in Italian children has been studied by Snow, of Buffalo, whose work shows that the transplanting of a southern race to a northern climate is an attendant factor in inducing the disease. Snow says that the migration of a southern race to a northern climate has few parallels in history, and it is reasonable to suppose that the change from an out-of-door life in a semitropical country to the gloomy skies and long winters of Atlantic cities would cause marked changes in physique. An out-of-door life and sunlight are essential for the development of the young of the human species. These conditions cannot be attained by the city poor. While race and environment are important factors in inducing rickets in children, if not subjected to the right kind of dietetics they will become rachitic, no matter how healthy the appearance or how healthy the surroundings. Rickets is a disease of nutrition, complex in nature, and not due to a single cause, but it belongs to the class of preventable diseases. Dietetic errors play a more important rôle in this disease than bad hygiene. Deficiency of food will certainly be followed by rickets, and if there is a marked lessening of proteids the tendency is increased. An excess of carbohydrates predisposes still further in this direction. Many of these children are fat and apparently well nourished. Of the unhygienic conditions, absence of sunlight is apparently the most potent cause. The disease is unknown in India and most tropical countries, even though the children commonly receive inadequate nourishment. Of course there is a practical absence of fat from the diet of the people of India, but they are not subjected to the same climatic conditions. The surest means of producing rickets in a young child is to provide a food deficient in fat and very rich in carbohydrates, and exclude sunlight and air.

A Short Umbilical Cord as a Cause of Dystocia.—

S. M. Brickner, in the *American Journal of the Medical Sciences* for November, 1899, says that an unusually short umbilical cord has long been known to possess inherent difficulties. Obstetricians distinguish between cords which are inherently short and those which are shortened by being wound about the fetus. As the cord varies in length, no precise statement can be made of what constitutes a short cord. To be a factor in the delay of labor, the cord must actually be so short, measured from the umbilicus to its placental insertion, that the birth cannot take place without an accident. Experiments show that an average cord will break under a strain of between eight and nine pounds. As the uterine forces greatly exceed this, it is apparent that if the cord is too short it will be torn from its insertion, loosen the placenta, or be ruptured in its continuity. The limit of safety is about ten inches, but this varies according to its insertion. If the placenta be attached to the fundus thirteen inches is too short, while if the placenta be inserted somewhat lower eight inches may be sufficient. The short cord is a rare condition, some writers being inclined to doubt that an absolutely short cord exists. The author describes a case in which a cord ten and a half inches long was the cause of dystocia, and resulted in tearing the placenta from its attachment during the progress of the labor. The child was born asphyxiated, but was easily resuscitated. There was a moderate umbilical hernia in the child, which disappeared under treatment.

The diagnostic points in the order of their importance are: (1) Arterial bleeding during and between uterine contractions; (2) recession of the head in the intervals of pains; (3) urination in small quantities in the intervals of pain, after the establishment of the second stage; (4) pain over the placental site, especially during the uterine contraction and during application of forceps; (5) a desire of the patient to sit up; (6) uterine inertia. The short cord can rarely be diagnosticated with certainty before birth; when suspected, labor should be terminated as soon as possible. By pressure upon the fundus the placental and umbilical insertions are approximated, and thus the danger of rupture is somewhat lessened.

Saline Infusion in Eclampsia.—

F. S. Newell, in the *Boston Medical and Surgical Journal* of November 9, 1899, has studied the cases of eclampsia which were admitted to the Boston Lying-in Hospital since 1885. In discussing the question of treatment of the ninety cases, the author makes the general criticism that the disease was too often treated at the

expense of the patient, and that stimulation was too often neglected, in spite of the fact that the treatment employed was generally depressant. Shock after operative delivery he thinks has played a not unimportant part in the death-rate. Pilocarpine was used in the treatment of fifty-six cases, five of which died of pulmonary edema. Morphine was used in two cases to control the convulsions. One-fourth-grain doses were given in fourteen cases and repeated once after a two-hour interval. Both patients developed alarming symptoms after the second dose, the respirations dropping below ten. Saline infusion was tried in eight cases, four of which died. Two were *in extremis* at the time of the infusion and were only given one pint each, so that the treatment was not given a fair trial. Of the six cases in which the treatment was thoroughly carried out, four seemed hopeless, and the infusion was tried as a last resort. Two of the patients made good recoveries. A third reacted well and seemed to be convalescent, but relapsed on the fifth day and died on the seventh. The fourth case did not react at all. The fact that two out of four hopeless cases recovered indicates that this treatment is worthy of careful trial. The statistics emphasize the value of immediate delivery as a therapeutic measure. The mortality of those cases in which convulsions began after delivery was less than in those in which it began before, which shows that early emptying of the uterus is of practical utility, especially if adequate means are taken to prevent shock. In the sixteen deaths which occurred after delivery, shock is believed to have played an important part.

Kraurosis Vulvæ.—

J. M. Baldy and H. L. Williams, in the *American Journal of the Medical Sciences* for November, 1899, describe a case of this exceedingly rare affection. The infrequency of its occurrence may be inferred from the fact that Lewin saw no case in between seventy and eighty thousand patients treated at the Charité. The authors have chosen this particular case to make a careful study of the pathology of the affection, which seems to consist essentially of an atrophy of the corium and elastic portions of the skin, with hypertrophy of the epidermis. There is an entire absence of hair follicles, blood-vessels, and muscular fibers on cross-section, but frequent areas of small round-cell infiltration. The effect of this is to cause a marked contraction of the vulvar orifice. Scratching and the pathologic changes secondary to this condition seem to have something to do with its development. That all cases of pruritus do not go on to kraurosis may be explained by the fact that patients seek treatment

before the secondary changes in the skin take place. Many writers accord this condition a distinct place in nosology. In the case reported by the writers contraction had become extreme and had resisted all attempts at dilatation. The skin of the part presented a dead-white appearance. This altered integument was excised, a strip being removed one-half to three-fourths of an inch wide, beginning at the urethra and completely encircling the vulvar opening. The innermost edge of this strip followed the line of junction of the vaginal mucous membrane throughout. The edges of the healthy skin and mucous membrane were united by sutures, the operation giving complete relief of the contracture.

The Cause of Scarlet Fever.—

H. O. Hall, in the *Medical Record* of November 11, 1899, says that an extensive historical and literary study of scarlet fever reveals some interesting facts. Scarlet fever occurs in epidemic form in all countries in which cow's milk forms a staple article of food, but does not occur in countries where cow's milk is not used and where children are raised on mother's milk alone. In Japan, where cow's milk is not used as a food, scarlet fever is rare or unknown. In India, where cow's milk is used as a food, but where, as in Japan, children are nursed until three, four, and even six years of age, scarlet fever is rare, if not unknown. In countries where goat's and asses' milk is used as food, scarlet fever is unknown. Epidemics of scarlet fever in London and elsewhere have been traced directly to the use of milk from certain cows affected with udder disease. Certain diseases in the lower animals precede or follow similar diseases in the human race.

Relapse in Measles.—

T. W. Harvey, in the *Medical Record* of December 2, 1899, describes the case of a patient eleven months old, who during an epidemic of measles was taken with the usual symptoms, and the eruption was well broken out on the 10th of June last. The catarrhal symptoms were well marked, and the temperature during the first four days varied from 101° to 103.2° F. There was a bronchitis of moderate severity. The rash was gone at the end of the first week, and after a slight desquamation the child was regarded as convalescent on the eighteenth day. Two days later there was coryza, conjunctival inflammation, and a slight rash on the face. On the following day the temperature reached 103.6°, and on the succeeding day the rash was typical and universal. For three days the temperature remained above 105° F. There was marked bron-

chitis and gastroenteritis. A profuse desquamation began soon and continued for the following ten days, coincident with an improvement of all the symptoms. A second convalescence was established July 17, one month and seven days after the first attack.

Formative Period of Uterine Fibroids.—

Grace P. Murray, in the *Medical Record* of December 2, 1899, says there is a possibility of determining by definite clinical symptoms the formative period of uterine fibroids. The predisposing causes of race, age other than that of adult life, or condition, count for little, and the elaborate reports which form the bulk of the literature up to the present time are of doubtful value. Chronic inflammatory conditions of the endometrium, uterine parenchyma, and of the ovaries and tubes, are powerful predisposing causes. There is a direct relation between the uterine hyperplasia and the formation of fibromyomata. Insomnia, headaches, and hyperesthesia are conditions which frequently precede and accompany the formation of fibroids. The size and rapidity of growth of a fibroid depend on its blood-supply, which is determined by the location of the nidus. Conditions such as pregnancy and the menopause have comparatively little influence.

A Fulminating Case of Purpura in an Infant.—

Pierre Boulloche, in *La Presse Médicale* of November 4, 1899, describes the case of an infant who had been in excellent health. He was taken suddenly with severe fever followed by purpura. Some hours after the abrupt invasion dark red spots covered the body; the temperature was elevated, and the pulse rapid. There was cyanosis and coma. The disease belonged to those infectious forms described by Guellot, and later by Henoch, under the name of fulminating purpura. This disorder has been observed, clinically, exclusively among very young subjects. It is accompanied by grave general and nervous symptoms, with rapid development of the purpuric spots and phlyctenules, but no hemorrhages in the mucous membrane. The disease is commonly fatal in ten or twelve hours. This case proved an exception to the rule; the recovery was largely attributed to the use of artificial serum and tepid baths.

Suprarenal Capsules in the Treatment of Rickets.—

W. Stoltzner (*Deutsche Medicinische Wochenschrift*, 1899, No. 37) has studied the action of suprarenal capsules in rickets for the past six months. He finds that this substance exerts a favorable influ-

ence on the general condition of these patients, lessening the agitation and vasomotor disturbances in craniotabes. In most cases marked amelioration of all the symptoms was noted in from eight to ten days, and the infants that were treated by this substance went on to a more rapid recovery than those to whom it was not given. The fontanels closed more rapidly, and it exerted a special influence over the deformities. Spasm of the glottis was not improved by the treatment. The most marked improvement was noted in the first eight days of the treatment, after which it was less rapid.

FORENSIC MEDICINE.

Poisoning by Sulphonal or Trional.—

H. C. Wood, Jr., in *Merck's Archives* for November, 1899, says that large amounts of sulphonal have been taken at a single dose, but there is, so far as his knowledge extends, only one fatal case of acute poisoning on record. This was reported by Petitt in the *Medical News*, 1899. In this case thirty grains was given, which was followed by a sleep that ended in death in forty hours. He notes that Friedlander describes a case in which three ounces of sulphonal was given to a boy 15 years of age, and he slept five days and woke not much the worse for his experience.

Chronic sulphonal poisoning is increasingly common. The first signs of the toxic action of the remedy are so unsuggestive that they are often not observed until the urine becomes blood-red in color, after which the prognosis is very grave. These early symptoms are nausea, general lassitude, and weakness, with some disturbance of the bowels. These slight premonitory symptoms are not at all distinctive, and being frequently associated with symptoms with which sulphonal has been used there is nothing to direct attention to the danger the patient is in until the vital powers fail and dissolution is imminent. Advanced stages of sulphonal poisoning have colicky pains in the epigastrium, vomiting, and constipation of an obstinate kind. There is a sense of weakness and occasionally paralysis. There is usually ataxia of both arms and legs. The red urine, or as it is sometimes called "port-wine" urine, is highly acid and is later albuminous.

Trional was generally stated to be devoid of toxic effects, but lately several deaths have been reported from its use. The symptoms closely resemble sulphonal poisoning, except that they occasionally come on earlier, and a diagnosis may sometimes be made in

time to save the patient's life. The comparative fatality of both sulphonal and trional poisoning is shown by the fact that of twenty cases of the former seventeen had a fatal termination; of nine cases of trional poisoning three died. In three of these the diagnosis was made before the red coloration appeared in the urine.

In the treatment of these conditions morphine may be given, combined with small doses of chloral or hyoscine. The bowels should be thoroughly emptied. Alkalies should be given, such as sodium bicarbonate combined with large quantities of water, administered by the bowel and injected beneath the skin.

Senile Dementia and Marriage.—

J. G. Kiernan, in the *Alienist and Neurologist* for October, 1899, discusses this subject and cites a case recently tried in the Circuit Court of Cook County, Illinois. The action was before Judge Tuley, and was begun by the wife, who entered a suit for separate maintenance and to set aside certain trust deeds which had been given by her husband to his children. The evidence showed there had been a marked change in the groom for several years preceding this marriage. He had become forgetful, particularly of recent events, careless of dress and of the proprieties, and indifferent to his business interests. He ceased to attend church, although he had been a regular attendant for forty years. During the last illness of the first wife he proposed to take a trip around the world. In a journey to Europe, shortly before his second marriage, it was necessary to care for him as if he had been a child. His language became coarse and vulgar. He told porters and cooks of his business and domestic affairs. He bought useless articles. In relation to household expenses he was penurious. After his first wife's death he attended to no business whatever. With all this capriciousness there was much mental exaltation and an attempt at silly jokes.

In commenting upon the case Judge Tuley says: "One of the chief grounds on which it is contended that a decree of nullity as to the marriage should be entered is the insanity and consequent incapacity of the groom to enter into the marriage contract. The Illinois statutes provide that no insane person or idiot shall be capable of contracting marriage; and the words, insane person and lunatic, shall include every idiot, *non compos mentis*, insane, or distracted person. These provisions are but declaratory of the common law, and a simple marriage ceremony will not make a couple man and wife; capacity and consent are absolutely essential, but a celebration only contingently so. The law of Illinois, as

laid down in the Owings case, is that a contract made by a person who is *non compos mentis* is entirely void. In that case dotage is defined as that feebleness which proceeds from old age. It is a diminution or decay of that intellectual power which was once possessed. The external functions gradually cease, the senses waste away by degrees, and the mind is imperceptibly visited by decay. The inert and dull sense transmits passing occurrences imperfectly to the sensorium, and they leave no, or but very transitory, impression. Long past transactions are often remembered with more exactness than those which have taken place recently. In the second childhood, as in the first, the present makes but a faint and fleeting impression on the mind; hence judgment in both stages is weak and the conduct unsteady and frivolous. A man in his dotage is distinguishable from an idiot who has no mind at all, or a lunatic whose mind is in ruins. The old man has a mind that is in a state of decay, it is true, but so much of it as remains is feebly governed upon the principles of its former sound condition. Its conceptions are not impertinently mixed, but it is feebly misguided in the feeble operations of which it is capable. Perhaps the most striking peculiarity of dotage is in its imbecility of perception. The senses not supplying the mind as usual with matters for exertion, it decays for want of use and becomes incapable of receiving any additional ideas or of following through any unusually concatenated or long combination of thought. Hence infants and the dotard present a remarkable similarity in the feebleness of their minds and easily surrender themselves to the direction of those about them for whom they have a regard or who may choose to exercise any authority over them."

In deciding the case Judge Tuley said that the authorities generally laid down that the party must be able to understand the nature of marriage and its consequences. This makes the test whether there is sufficient mental capacity to give intelligent consent. If the incapacity be such that the party is incapable of understanding the nature of marriage, and he, by reason of his mental incapacity, is unable to care for his personal property, such individual cannot dispose of his own person by a marriage contract any more than by any other contract.

The Surgeon's Responsibility for the Acts of His Assistants.—

An editorial in the *Medical Record* of December 2, 1899, says that the extent of a surgeon's responsibility for the acts of a trained nurse is to be tested in a suit for damages against an operator of

Columbus, Ohio. A patient who had had an abdominal section died of sepsis due to leaving a pad of absorbent gauze in the abdominal cavity. The cause of the difficulty was not determined until several months after the operation, when the wound was reopened. The surgeon, in extenuation of responsibility, said that at the conclusion of the operation he asked the head nurse, who was handling the pads, if they had all been accounted for. She replied in the affirmative. The operator pleads in his own defense that the blame was wholly due to the negligence of the nurse. The case brings fairly up for discussion the relation of assistants to an operator. If the broad principle is to obtain that a surgeon is primarily responsible for the acts of his assistants and all that goes on during an operation, then he should clearly be held accountable for such an accident as this.

The accidents due to the leaving of sponges or instruments within the abdominal cavity are of sufficient number to make their removal one of the leading details of an operation, and it should receive the personal attention of a physician. The operator must rely upon the statements made to him by his assistants, depending largely upon their care and fidelity. The frequency, however, with which these accidents occur shows the necessity of great care, and we see no reason why a surgeon should not take extraordinary care to prevent it. It would be a simple thing to make a list, giving the number and description of all instruments, pads, and sponges that are in the room during an abdominal operation. After it is completed this list can be checked up, and it ought to be possible by such means to be reasonably certain that they are all out of the abdominal cavity.

A Remarkable Crowbar Accident.—

Medicolegal books are scarcely complete without a reference to the celebrated crowbar injury to the skull. A. C. Miller, in the *Edinburgh Medical Journal* for October, 1899, records the case of a crowbar accident to the abdomen which was remarkable for the length of time the patient lived. A railroad laborer fell in such a way as to have the pointed end of a crowbar impinged upon the posterior surface of the thigh, which it penetrated, entering the pelvis behind Poupart's ligament and traversing the pelvic and abdominal cavities, emerging just below the right scapula. Hemorrhage was not severe, but the shock was very marked. There was great pain in the abdomen, frequent movement of the bowels, and vomiting was almost incessant. The patient lingered, with varying symptoms, for a period of three weeks, and finally died of what was

shown on autopsy to have been a toxemia due to the septic fluid in the thoracic cavity and a hepatic rupture. A remarkable fact in connection with the case was that an instrument of this character and size could traverse the abdomen with so little injury to its contents. There was secondary inflammation of the peritoneum with extensive adhesions, but there was no evidence that the intestines had been ruptured.

A Physician Sues for Libel.—

The *Journal of the American Medical Association* of November 18, 1899, states that T. J. Hillis, of New York, has sued a whiskey firm for libel. At a recent meeting of the New York State Medical Society he read a paper on alcohol as a heart tonic. Some expressions from this paper were utilized by an advertising whiskey firm. One advertisement quotes him as saying that "alcohol is a form of food already digested," without the modifying clause which followed it. The sentence as used by Dr. Hillis reads: "Alcohol is a form of food already digested, but is not adapted to the normal wants of the body, and cannot be used at a time and under conditions which render the digestion and assimilation of other nutritious substances impossible." On account of these misrepresentations and alleged unlawful use of his name Dr. Hillis has brought suit in the New York Supreme Court for libel and asks for $10,000 damages.

Double Consciousness.—

T. B. Hyslop, in the *British Medical Journal* of September 23, 1899, discusses double personality, which he classifies under seven different varieties: (1) Those occurring in early life, in which the abnormal state is preceded by night terrors, somnambulism, or both; (2) types in which the abnormal state is preceded by profound sleep, and in which the normal state is only again reached by sleep; (3) types due to temporary or periodic amnesia, acquired as the result of accident or injury; (4) epileptiform types; (5) insane types; (6) hysterical anesthetic types; (7) types in which, during the abnormal state, the subject assumes the possession of a mediumship.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

GASTROINTESTINAL INFECTIONS IN INFANTS.

BY I. A. ABT, M.D.,

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The subject of gastrointestinal infections of infants and children is of far-reaching importance, for to this diseased condition perhaps more than any other is due the high mortality which occurs among infants.

It would be going too far to say that every disease of the child's alimentary tract is an expression of some infection; quite the contrary. It is well known that many of these diseases in infancy start as indigestions; they are brought about because the quantity or the quality of the nourishment is unsuited to the infant's digestive powers. Thus we have commonly a condition termed dyspepsia, which may occur in breast-fed children, this being caused usually by some alteration in the normal composition of mother's milk. Such changes occur where mothers have undergone an acute illness or have been subjected to some form of emotional excitement. The occurrence of menstruation during the period of lactation not infrequently causes the nursing child to suffer from dyspeptic symptoms. Sometimes the mother's milk is so rich in proteid substances that the child suffers after each feeding from flatulence, colic, and diarrhea, which are symptoms of dyspepsia. A similar condition of indigestion, though usually much more severe and pronounced, occurs in hand-fed children.

Dyspepsia may be due to some trivial cause, and a speedy cure may be effected. Very often, however, the dyspepsias are the predisposing factors in the production of the infections of the gas-

trointestinal canal. "Quick and complete digestion is the great safeguard with which nature opposes the undue development of microorganisms in the intestinal tract."

The undigested and fermented food material furnishes a pabulum which favors the development and growth of microorganisms which are already present in the intestinal canal or which are introduced with the foods. Numerous efforts have been made to isolate the exciting factor in the production of the disease. The question which presents itself is, Have we any new or important data which will aid us in understanding the cause, nature, and treatment of the gastrointestinal diseases in infants?

A great increase in the number of intestinal bacteria occurs in every case of severe intestinal disorder, and the bacteria are more widely distributed throughout the alimentary tract than under conditions of health.

Booker, who has contributed one of the most valuable papers of recent years on the flora of the gastrointestinal tract, classifies the acute diarrheas into three groups:

1. The dyspepsia, which is non-inflammatory in character, and has already been alluded to.

2. In this class symptoms of moderate inflammation are present; there is an elevation of temperature, with vomiting and diarrhea, and usually a considerable degree of toxemia. In these cases the stools are frequent, watery, and of a pasty consistency; bacilli are present in great numbers. The colon bacillus and bacillus lactis aerogenes occur in large numbers. Bacilli A, D, and X of Booker are also abundantly present.

3. In the third group of cases we meet with a distinctly inflammatory diarrhea, associated with symptoms of general infection. The stools are frequent, slimy, and contain many leucocytes. Streptococci are found in predominating numbers, although other forms of bacteria may also be present. In many instances more or less ulceration of a suppurative character is said to be found post mortem.

The bacterium coli commune was discovered by Escherich in 1885. This microorganism is one of the normal inhabitants of the intestine from the earliest period of life; it was for a long time believed to be non-pathogenic, though it is now found in various tissues and organs of the body, and has been associated in a causal way with a variety of diseases, among which may be mentioned enteritis, colitis, peritonitis, cystitis, gas phlegmon, and puerperal fever.

A number of bacteriological investigators[1] favor the theory that the colon bacillus may become virulent if contained in the living fluids of the body, especially if these fluids are supplied with an excess of albuminous matter as the result of an inflammatory process.

The bacillus lactis aerogenes, normally associated with the colon bacillus, is regarded by some as being capable under certain conditions of carrying on a pathogenic activity. As Baginsky puts it, microorganisms not distinctly pathogenic in themselves may under abnormal conditions so increase in number that they become intestinal irritants, either in themselves or through their products. The bacteria which give rise to acid by-products, such as lactic, acetic, or butyric, belong to this class.

In one group of Booker's cases the bacillus proteus vulgaris occurred in large numbers. As shown by Vaughan, proteus growing upon bouillon produced toxic substances, which if injected subcutaneously into young animals produced vomiting, purging, and death.

The third group of Booker's cases is that in which streptococci predominate. These latter cases have been studied by Hirsh,[2] Libman,[3] Spiegelberg,[4] Monti,[5] and Escherich.[6] The last mentioned investigator published during the present year an elaborate monograph upon the subject of streptococcus enteritis. He says that under normal conditions the stools contain only a few micrococci; these he has been acquainted with for a long time, though he had no success in isolating them. The recent investigations of pathological cases by Booker, of Baltimore, caused him to take renewed interest in this subject; he found these cocci associated with colon bacilli, though most often the cocci predominated.

These cocci vary in size and arrangement. The diameter varies from 0.5 to 5 μ; they appear larger if stained with Weigert's stain than if treated with methylene blue. They appear frequently diplococcoid, though arranged in the form of chains; in some cases the diplococcus form may be absent, giving way to the ordinary streptococcus arrangement.

Escherich studied the growth of these cocci on culture material;

[1] See Peckham, *Journal of Experimental Medicine*, vol. ii, No. 5.

[2] Hirsh: Ein Fall von Streptokokken Enteritis im Säuglings Alter, *Centralblatt f. Bakteriologie*, xxii, 1897.

[3] Weitere Mittheilungen über die Streptokokken Enteritis bei Säuglingen, *Centralblatt Bakteriologie*, xxii, 1897.

[4] Streptokokken Enteritis, *Centralblatt f. Bakteriologie*, Bd. xxiv, 1898.

[5] Monti: *Kinderheilk. Vorträge*, Heft 4.

[6] Escherich: *Jahr. f. Kinderheilk.*, Bd. xlix, 1890.

he found that they differed from the streptococcus pyogenes because of their slight virulence and the difficulty of growing them on artificial culture material. He thinks that this group of bacteria resembles more in biological character pneumococci and meningococci than the pus-producing streptococci. The term streptococcus, however, is used in its broadest sense to indicate the arrangement of the cocci.

The microorganisms find their way into the child's gastrointestinal tract through milk, for these identical micrococci have been recently isolated from cow's milk, and Escherich says the numerous streptococci which reside in the mouth may cause the infection.

In some of the acute cases these microorganisms were found in organs outside of the intestinal canal. They were found in the lungs; in one case they occurred in the liver, kidney, and heart muscle.

Animal experiments showed that the injection of one cubic centimeter of bouillon culture containing these cocci was fatal to white mice in twenty-four hours. On the other hand, guinea-pigs and rabbits received great quantities of the same bouillon culture by hypodermic injection without the least effect. In spite of the failure of animal experimentation Escherich believes that the clinical evidence—*i.e.*, the occurrence of large numbers of cocci in connection with severe cases of catarrhal inflammation of the bowels—justifies the belief that the cocci bear a causal relation to the disease.

In the last number of *Experimental Medicine* which has come to hand, an article entitled "Diplococcoid Form of the Colon Bacillus," under the joint authorship of J. George Adami, Maud E. Abbott, and F. J. Nicholson, throws much light on streptococcus enteritis, and the incongruities into which Booker and Escherich and others fell while investigating this subject.

In this paper it is shown that the colon bacillus may under certain conditions undergo complete change in form. Certain of the body fluids—*i.e.*, the ascitic and peritoneal fluids—were inoculated with colon bacillus and the fluids placed in an incubator, from which a growth was obtained. This was examined, and it was found that instead of obtaining colon bacilli, diplococci occurred; some of these were arranged in chains. These diplococcal forms were subjected to subculture and successive inoculations, with the result that bacilli again developed. These experiments were repeated in various ways, always with the same result. Thus it may be concluded that the colon bacillus and a diplococcus form are mutually interchangeable; the form which occurs undoubtedly

depends upon certain conditions of environment, the exact nature of which has not yet been solved. The paper also shows that colon bacilli injected into the circulation may appear as diplococci in the cells of liver and kidney.

It is true the facts contained in this contribution remain to be confirmed, but the experiments appear so conclusive and to fit so well that they seem to form, so to speak, the missing link in Escherich's study of streptococcus enteritis. He himself recognized that the organisms which he described were only streptococci in the widest acceptation of the term, and he noted also that they arranged themselves in diplococcus groups tending to form chains.

There can be no doubt, however, that the pyogenic microorganisms may under certain conditions gain access to the gastrointestinal canal and produce symptoms of septic infection. This is particularly true in new-born children, where acute gastrointestinal sepsis is not altogether of infrequent occurrence. I shall cite briefly the history of such a case:

Baby G—— was seen through the kindness of Dr. J. B. De Lee. The baby was 19 days old; it had not thriven since birth, having lost steadily in weight. Up to the end of the first week the infant appeared well, but at this latter time it began to have an irregular temperature of the septic type. The skin covered the skeleton loosely and could be picked up in folds. The fontanel was deeply sunken; the cranial bones overlapped; the face was wrinkled and appeared senile. The thoracic organs were negative. The abdomen was distended and tympanitic. A few superficial veins stood out prominently; the cord had fallen off; the umbilicus itself had not healed; it seemed moist, and an area the size of a fifty-cent piece was indicated; there had been some hemorrhage from the umbilicus wound, also some from the bowel, as well as from the mouth and nose. The stools were somewhat more frequent than normal.

Every effort was made to counteract the septic process by supporting the child's strength through the administration of food (in this case mother's milk) and by the use of stimulants and gastrointestinal antiseptics. The navel was treated antiseptically. The child died on the nineteenth day of its life.

The autopsy was performed by Professor Fütterer and Dr. Zeit, who reports as follows:

A. Anatomical diagnosis: (1) Follicular catarrhal enteritis. (2) Dilatation of the gall-bladder, obstruction of the common bile duct. (3) Fatty liver.

B. Histological examination: (1) Liver: High degree of fatty

infiltration, particularly in peripheral zones of acini, but also in the central zones. (2) Intestine: Mucosa almost entirely cast off; only a layer of small cell infiltration remaining. Some gland structure remains, in isolated areas. (3) Mesenteric glands show greatly injected vessels.

C. Bacteriological examination: (1) Intestinal contents: Direct smears show but few colon bacilli, but great numbers of staphylococci. (2) Stomach: Direct smears show staphylococci. (3) Liver: Direct smears reveal no bacteria, but all the cultures which were taken showed colonies of the staphylococcus aureus in pure culture. (4) Mesenteric glands: No bacteria could be found in the direct smears, and cultures showed no growth.

The septic features which the case presented are fully explained by the distribution of the staphylococci; their presence in the alimentary canal caused extensive destruction of the mucous membrane. Contrary to what was expected from the clinical course, the umbilical vessels showed no sign of infection. In this case the primary point of infection must have been through the gastrointestinal canal.

The opinion is general among bacteriologists and clinicians that:

1. The acute gastrointestinal disorders of children cannot be attributed to a specific form of bacteria.

2. The toxic symptoms of gastrointestinal infection depend upon the introduction into the alimentary canal of poisonous substances which are contained in the food. For example, Vaughan isolated a toxic substance, tyrotoxicon, from milk, which was poisonous for man and animals.

3. Bacteria may be introduced from without; or the ordinary saprophytic bacteria which inhabit the intestinal canal may take on a special virulence.

4. The most severe disturbances are caused by the metabolism of bacteria; these microorganisms by their activity either produce acids or cause decomposition of albuminoid substances; the products act as powerful irritants to the intestines, and by injuring the intestinal wall gain access to the blood and lymphatics, in this way producing the local and constitutional symptoms.

5. There can be no doubt that specific intestinal infection may occur in infants; the case of sepsis of gastrointestinal origin reported above illustrates this point. Typhoid fever, though not frequent in very young children, may also occur.

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THE TOPICAL APPLICATION OF IODOFORM IN THE TREATMENT OF TUBERCULAR AFFECTION OF SEROUS MEMBRANE, WITH CASES.[1]

BY ZERA J. LUSK, M.D., WARSAW, N. Y.

Abdominal section with irrigation and drainage is generally accepted as the most successful method of treating tubercular peritonitis. There is no doubt, when the disease is recognized in its early stage, before the patient is too exhausted, that celiotomy is attended with good results—indeed, a large percentage cured—especially in primary tuberculosis, and that often decided benefit follows the operation in the more complicated forms of the disease.

While the clinical evidence verifying the foregoing is abundant, reliable, and well known to the profession, it not infrequently occurs that conditions are present prohibiting this method of treatment, or at least offering only a forlorn hope of success. Among the causes of these may be mentioned errors in diagnosis, chief among which is typhoid fever, for which treatment has been continued until the vitality of the patient is so exhausted that when the mistake is discovered celiotomy if done is a *dernier ressort* promising little hope of recovery. Again, when an operation is suggested, it is often obstinately refused, or so long deferred as to render it a doubtful expedient. It was under these circumstances that I was called to attend some of the following cases, and the success of the treatment employed is my apology for this paper. The agent with which I accomplished unexpected results was iodoform topically applied, and demonstrated to my mind that in it we possess a potent remedy in the treatment of tuberculosis of serous membrane.

My first case was K. F——, blonde, aged 20, unmarried, occupation school-teacher. She noticed early in January, 1894, that she became easily fatigued, appetite poor, tongue slightly coated; a little later had pain in the bowels, with diarrhea. Was treated for biliousness without relief, and about February 1 was obliged to discontinue her school work. During the month of February, in spite of treatment, she grew worse, became pale and emaciated; nausea almost constant; pain in the bowels more marked. At a consultation of physicians, about March 1, the abdomen was found to be partially filled with ascitic fluid, the diagnosis of tubercular peritonitis was made, and they were united in the opinion that her recovery depended upon abdominal section. This was refused.

[1] Read at the meeting of the New York State Medical Association, Oct. 24 to 26, 1899.

She continued to fail rapidly, and on March 23 her condition was so critical that Dr. M. D. Mann, of Buffalo, N. Y., was called to see her. He concurred in the diagnosis, also that celiotomy offered the only possible hope of recovery. So grave were the doubts of her surviving the operation and so little encouragement of recovery given that her people decided against this so-called last chance.

On April 4, the attending physician leaving town, I was requested to look after the case. Her condition at this time was one of extreme emaciation, skin dry and harsh, temperature 100°, pulse weak (could scarcely be counted), about 130, constant nausea and vomiting, abdomen distended, epigastrium bulging, ascitic fluid extended to umbilicus—a distinct wave impulse on palpation. Rectal alimentation had been attempted without success; it appeared to induce paroxysms of pain. Opiates administered in any form aggravated the nausea, and at this time she was taking no nourishment. The family history showed father's brother died of pulmonary tuberculosis at the age of 26, and her mother's sister at 32.

While the stomach rejected medication in any form, I determined to try the remedy which I had recently read of as having been successfully employed by "inunction to the shaven head in a case of tubercular meningitis" (Nillson, *British Medical Journal*, Nov. 21, 1885), namely, iodoform. My treatment began as follows: An "iodoform poultice," I am pleased to call it, was prepared by mixing in a mortar one ounce iodoform to vaselin six ounces. This was spread liberally upon a cotton cloth, and the whole abdomen covered from ensiform cartilage to pubes, extending over either side to the spinal column, and secured in position with a bandage. Also gave dry on the tongue ¼ grain hyd. cum creta every three hours. No apparent change took place until the fifth day, when nausea appeared less distressing. On the sixth day a fresh poultice was applied. Her condition was without change until the tenth day, when she appeared brighter, there was less nausea, and she retained small quantities of rice-water; pulse at 2 P.M. 130, temperature 99½°. On the twelfth day bowels became loose; pulse 128, temperature 99°. From this time there was gradual improvement, and on the twenty-first day after I saw her she was given every four hours and retained one teaspoonful of cod-liver oil emulsion. The dose was gradually increased, until ten days later she was taking a tablespoonful four times a day. She continued to improve, and finally made a complete recovery. The nodules in the omentum cleared up, and she is to-day in perfect health, now over five years. The iodoform was changed from time to time during the first three months of treatment.

Case 2.—Minnie K——, aged eight, blonde. Sister died of pulmonary phthisis at 12, and brother of scrofula at 18. Had been sick seven weeks before I saw her, under care of homeopathic physician, who had treated her for typhoid fever. Her sickness began with abdominal pain, nausea and vomiting, with slight fever and loss of appetite. Was called to see her July 3, 1894. Pulse weak, 140; temperature 99°; stomach rejected everything, even water; emaciation extreme; abdomen immensely distended, partially filled with ascitic fluid; constantly moaning, with occasional screams, due to pain. Dr. George M. Palmer and Dr. Mann saw her with me, and concurred in the diagnosis of tubercular peritonitis. I had not the slightest hopes of her getting better. The abdomen was covered with iodoform poultices and hyd. cum creta, grain ⅓, dropped dry on tongue. For three days retained no nourishment; on fourth day more quiet, retained teaspoonful rice-water with very small quantity of Mellin's food; changed poultice. On fifth day began to see slight improvement; retained small quantities of nourishment. Suffice it to say her improvement was gradual. About the third week she retained small doses of cod-liver oil emulsion, and made a perfect recovery, and is to-day the picture of health, now over five years since her sickness.

Case 3.—G. M——, male, 26 years of age, traveling salesman. Had not been well for two years. About one year before had an abscess two inches below and one inch to left of right nipple; was treated in Buffalo General Hospital for about three months, during which time he was operated upon by Dr. Phelps, when portions of the seventh and eighth ribs were removed. Examination showed a tubercular osteitis. The wound healed, leaving large depressed cicatrix. Following this he was able to be about, and tried to do some work, but was weak and easily fatigued.

The last of December, 1895, pain began in side, in the region of the cicatrix. Had been troubled with night sweats, which were now more severe; had slight chills and fever. Saw Dr. P——, who prescribed remedies, but he grew weaker and more emaciated. He was unable to be about and went to the Warsaw Salt Baths. Dr. Fisher examined him and advised him to go home, which he did; and on February 10, 1896, I was called to see him. He was pale and anemic, pulse 120, temperature 100°, and tongue slightly furred. He had a dry cough, and short, rapid breathing; slight exertion caused dyspnea. He could not lie on left side. On examination I found the right chest bulging; percussion flat all over right side. I gave him small alterative powders, followed

in the morning with wine-glass of Hunyadi water. In the afternoon of the next day I removed with aspirator thirty-two ounces; two days later about the same amount. The right chest was covered with an iodoform poultice secured with bandage. Remedies given to regulate secretions, and as soon as possible tonics, with cod-liver oil emulsion. He made a perfect recovery, was up and about by the middle of April, and by July went to work. To-day he is in active business, on good salary, and is healthy, hearty, and well. I have not the least doubt that he owes his life largely to the iodoform poultice.

Case 4.—W. H——, male, 14 years of age; occupation laborer. Had been sick for three months when I saw him, during which time he had been treated for bilious fever for eight weeks, and then for typhoid fever. I found the abdomen tympanitic, nausea and vomiting, temperature 101°, pulse 130. Night sweats; pale and emaciated. Skin dry and scaly. Abdomen distended, and partially filled with fluid; wave impulse on palpation. The stomach rejected everything. Had been made comfortable by morphine hypodermically. I began treatment as in previous cases, with no perceptible change for two weeks. The extremities were cold and clammy. Alcohol baths were used, with strychnine $\frac{1}{20}$ grain every four hours, hypodermically. Soon began to improve and to retain liquid nourishment. The sixteenth week cod-liver oil was given every four hours. He gradually improved, in six months was able to be up and about, and at the present time considers himself well. It is now two years since his sickness.

Case 5.—J. M——, aged 13, blonde; had never been vigorous; had asthma since five years of age; pale, anemic, and emaciated; has no restful sleep on account of paroxysms of asthma. History of tuberculosis on paternal side. In December, 1898, pain developed in the right knee. No relief following the usual home remedies, I was called to see him. Found him in bed, with skin hot and dry; temperature 101°, pulse 120; tongue slightly coated. Right knee was swollen, red, and tense, leg flexed upon thigh, slight movement causing sharp, lancinating pains. He had had no asthma since beginning of this attack. He had received no injury, and could assign no cause for trouble. Knowing the tubercular history, and the insidious nature of the disease, my diagnosis was tubercular synovitis. I enveloped the knee with iodoform poultice, and treated general symptoms. As soon as possible I gave cod-liver oil. Inflammation gradually subsided, and in March I began passive motion. In April a small abscess developed in upper border of

popliteal space, which was opened, discharging freely. It was discharging until June, when I left on my summer vacation. On my return in August there was still a thin sanious discharge. I enlarged the opening and removed small pieces of carious bone, and injected iodoform emulsion. The discharge ceased, and he is now in good health. The pale, cachectic look is gone, and he is free from asthma; indeed, he is in better health than ever before.

In treating this case I made a discovery which I consider of value, and that is that iodoform is freely soluble in vaselin, mixed with vaselin in proportion desired, 1 to 10 or stronger, and heated in water-bath. When the vaselin is melted the iodoform becomes dissolved and will not precipitate on cooling. When we desire to use it for injection it is quickly rendered soluble by heat. I found this a convenient method in treating suppurative glands in the groin after cleansing with hydrogen peroxide. I injected in semifluid form, and the ducts leading to the infected glands would be swelled up as they were filled. The result was very satisfactory.

These cases were unmistakably tubercular. They had been seen and treated by physicians in good standing and of unquestioned ability, yet in spite of their treatment they continued to grow worse. When I first saw them the apparent end was near, yet they recovered, and are alive and well to-day. That they owe their lives to iodoform there can be no doubt. In what manner iodoform accomplishes these results has been a matter of much speculation. That the bacillus tuberculosis is not destroyed in a 10-per-cent emulsion is well known. How, then, can it arrest its destructive processes? It is well known that upon certain soil the tubercular bacillus remains inert, that it requires a special environment in order to thrive. When that condition is present it displays its destructive power with astonishing rapidity. Celiotomy has established one important fact in these cases, and that is that its destructive action is arrested; certainly it is not destroyed *per se*, but important changes take place in the soil upon which it grows. Its feeding ground is rendered barren, its power weakened, and the leucocytes thus fortified are enabled to complete the work. In a similar manner iodoform accomplishes a like result by its absorption; the soil upon which it has been nourished no longer furnishes a healthy environment. Robbed of its necessary support it becomes helpless and weak from starvation, and becomes an easy victim of the leucocytes, the circulation is cleared of the destructive elements of their toxins, reconstruction of injured tissues occurs, and the health of the patient is restored.

A CASE OF BLASTOMYCETIC DERMATITIS—CLINICALLY AND HISTOLOGICALLY, AN EPITHELIOMA.[1]

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No subject at the present time awakens more interest among pathologists than the presence of blastomycetes, or yeast-like fungi, in cases of dermatitis, carcinoma, and sarcoma. The following can be added to the cases of blastomycetic infection previously reported from the United States by Gilchrist,[1] Gilchrist and Stokes,[2] Wells,[3] Hessler,[4] and the two cases recorded in an article by Hyde, Hektoen, and Bevan,[5] making a total of seven cases about to be or already reported. In keeping with these, I have called the case one of blastomycetic dermatitis, although the clinical and histological features of the growth would justify the term blastomycetic epithelioma. The brief and rather imperfect history of the case is as follows:

A man, 37 years of age, by occupation a stationary engineer, presented himself for treatment at Dr. Wm. M. Harsha's clinic at the College of Physicians and Surgeons of Chicago about May 15, 1898. The patient was suffering from a growth on the lower lip, at the junction of the mucous and dermal surfaces, involving about the middle third of the lip.

The patient's general appearance was good; he seemed healthy and well nourished; there was no history of syphilis or tuberculosis. A similar growth had been removed from the outer margin of the right lower eyelid, about one week before the patient presented himself at Dr. Harsha's clinic, by Dr. Wm. A. Fisher, at the Chicago Eye, Ear, Nose, and Throat College. The scar resulting from Dr. Fisher's operation was healed at the time the patient was first seen by Dr. Harsha.

From the appearance of the lip, together with the previous history, Dr. Harsha made a diagnosis of epithelioma and removed the growth. The operation was a success, the wound healing by first intention within one or two weeks, after which time no further history of the case could be obtained. Unfortunately, neither the records of the Eye, Ear, Nose, and Throat College, nor of the College of Physicians and Surgeons, throw any light on the duration of the growths on the right eyelid and on the lower lip, nor is it stated which growth was primary. The brief record of the case

[1] Read in part at the May, 1899, meeting of the Chicago Pathological Society.

from the Eye, Ear, Nose, and Throat College states that the patient had a growth on the outer margin of the right lower eyelid, also one on the lower lip, and that the glands at the angle of the jaw on the right side were enlarged. Dr. Fisher removed the growth on the eyelid and referred the patient to Dr. Harsha's clinic at the College of Physicians and Surgeons for treatment of the lip and the enlarged glands.

Since the above account was written the patient has again (Nov. 15, 1899) come under observation, and the following additional history was obtained by the writer in a personal interview:

Mr. J. T. F——, aged 38, American, born of Irish parents; married ten years; wife healthy; one healthy child seven years old; mother living, aged 68, health good; father died from accident; three sisters and one brother living, all healthy; no family history of tuberculosis or cancer.

Previous history: Patient had measles in childhood; fifteen years ago was confined to bed for six weeks with typhoid fever, but made a good recovery. Gonorrhea in 1887, discharge lasting one month; no trouble since. Weight, November 15, 1899, 193 pounds; never weighed more than 180 pounds up to six months ago; weighed about 170 pounds at time of operations on eyelid and lip.

Personal habits: Drinks moderately; was never intoxicated; chews about two ounces of tobacco daily. Up to time of operation on eyelid and lip was a constant smoker of a corn-cob pipe, but has discontinued it, as the use of pipe causes scar on lip to smart and burn.

History of growths: In January, 1898, patient had rheumatism affecting knees and elbows, suffered intense pain, but states that affected joints were not much swollen. The joint difficulty lasted about two weeks, when patient was seized with severe pains in right breast and under right shoulder blade. He was confined to bed and house about three months with this attack, which was accompanied by cough and bloody expectoration at times. He was attended by two physicians, who pronounced the disease pleuropneumonia. Patient lost about thirty-five pounds in weight during the illness.

While recovering from this attack, a small hard swelling appeared on the right lower eyelid near the outer angle. This swelling came to a "head" and was opened several times with a needle, on the supposition that it was an ordinary sty. The nodule contained little pus at any time, but continued to enlarge, and attained the size and shape of a bean at the time of its removal, about three weeks after its appearance.

One or two weeks after the appearance of the growth on the eyelid a similar nodule, but softer, developed on the middle of the lower lip; this increased rapidly in size in spite of local treatment, and attained the size of a hazelnut in about three weeks' time, when it was removed by Dr. Harsha. This nodule forms the subject of the present paper.

Of additional importance is the fact that soon after the growth appeared on the lip another growth developed on the posterior surface of the middle finger of the right hand, just below the base of the first phalanx. This nodule on the finger attained a size of ¼ x ⅝ inches in three weeks' time, and was curetted out by Dr. C. C. O'Byrne, Dr. Harsha's assistant.

The patient states that about eight small nodules also made their appearance on each of the lower extremities about this time; these were more numerous on the anterior and external surfaces of the thighs, only one or two being present below the knees. These growths on the lower extremities, the largest about three-eighths of an inch in diameter, were small, shot-like, blood-red in color, contained no pus, and at the end of four or five weeks became scaly and could be brushed off. Questioned in regard to glandular enlargement, the patient stated that the glands of his neck, back of the angle of the jaw on the right side, became enlarged about two weeks before the growths appeared on the eyelid and lip. These glands formed a mass which attained a diameter (according to patient's statement) of one and one-fourth inches, but after persisting about one month the bunch gradually disappeared.

At the present writing (Nov. 15, 1899) the scars resulting from the several operations show distinctly; there are no glandular enlargements, and no visible signs of nodules or tumor-like growths anywhere on the body. The patient is now being treated for a crushed finger, the result of an accident; otherwise he appears perfectly well.

The additional history, as given above, does not change the writer's opinion of the histological resemblance of the growth on the lip to squamous-celled epithelioma, but does introduce an element of uncertainty into the case. What, if any, relation is there between the attacks of rheumatism and pleuropneumonia, and the development of enlarged glands and isolated, tumor-like nodules on the eyelid, lip, finger, and lower extremities? There are two possible solutions to this question, either of which may be tenable:

1. The skin lesions were simply manifestations of a general systemic blastomycetic infection, giving rise to the joint difficulty,

pleuropneumonia, glandular enlargement, cough, bloody expectoration, loss of weight, etc.

2. The skin lesions were primary, and might be considered as such, the blastomyces simply finding a fertile soil in a system already weakened by rheumatism and pleuropneumonia.

In support of the first view we have Busse's case of chronic pyemia, in which the skin lesions were part of a systemic infection, caused by a pathogenic blastomyces which produced similar lesions experimentally; the statement of Mafucci and Sirleo, that blastomycetes produce septicemia, suppurative and chronic inflammatory processes of the nature of granulomata; and Roncali's observation of blastomycetes in urine and expectorations.

The second view finds support in the case of blastomycetic infection from Professor Murphy's clinic, which was identified by Hektoen and carefully studied by him and the writer, a report of which will be found in an article by Hyde, Hektoen, and Bevan.[5] In the Murphy case there was an isolated, tumor-like growth about the size of a silver dollar on the patient's leg, which was originally diagnosed, clinically and microscopically, as an epithelioma. Hessler's case,[4] previously referred to, might be cited in support of the second view of the present case.

Dr. Fisher's diagnosis, based on the clinical history and the microscopical examination of the growth on the eyelid, made by the Columbus Medical Laboratory, was multiple epithelioma.

The growth removed by Dr. Harsha was sent to the Clinical Laboratory of the College of Physicians and Surgeons for microscopical examination, which was made by one of my students, now Dr. Fred G. Harris.

The clinical diagnosis of epithelioma was verified at that time by the microscopical examination, although the presence of a few isolated giant cells in the sections raised the question as to the possibility of the growth being tubercular in origin, or possibly a mixed tuberculosis and epithelioma. Dr. Hektoen, however, having called my attention to the presence of blastomycetes in some of my slides from a similar case from Dr. J. B. Murphy's clinic, I corroborated his findings in Dr. Murphy's case, and later demonstrated the presence of numerous blastomycetes in the growth removed by Dr. Harsha.

Before taking up the pathological findings in Dr. Harsha's case, I would call attention to certain points of difference in the clinical history of this case and the cases reported by Gilchrist, Gilchrist and Stokes, Wells, Hessler, and Hektoen in America, and Busse.[6]

In the cases reported by the above clinicians, with the exception of Hessler's, there was a much larger area of epithelial surface involved than in this case; in fact, there was more or less of a diffuse dermatitis. Busse's case was one in which the skin lesions were part of a general systemic infection, starting as an abscess in the tibia and producing a pyemia. The organisms in Busse's case also differed; they possessed nuclei, stained deeply by Gram's method and other common stains, and resembled tissue cells.

In Hessler's case the lesion appeared as a pustule, and was diagnosed as such, but no mention is made of any histological findings. Possibly, had we a better history of the patient in this case, the clinical history would be found to agree better with the cases previously reported. With the history obtainable, the growth on the eyelid, the growth on the lip at the point where the lip was constantly irritated by the use of the corn-cob pipe (suggestive of smoker's cancer), the enlargement of the glands at the angle of the jaw on the affected side, the clinical appearance of the two growths, and the clinical diagnosis as given by several clinicians—all these facts point to the possibility and probability of the growth being an epithelioma, with the blastomycetes present as a probable cause. If not an epithelioma, then we have to deal with a type of growth that undoubtedly has been repeatedly mistaken by able clinicians and pathologists for epithelioma.

Description of the Specimen.—As previously stated, the growth occupied the middle third of the lower lip and consisted of a raised nodular mass about the size of a hazelnut. The specimen was fixed and hardened in formalin and alcohol (formalin five parts, alcohol one hundred parts), embedded in paraffin, stained with Delafield's hematoxylin and eosin, methyl blue, carbol-fuchsin, etc.

By careful searching the blastomycetes could be readily detected in the sections stained with hematoxylin and eosin, especially where the sections were decolorized in 1½-per-cent hydrochloric acid alcohol after staining in hematoxylin, then passed through distilled water, saturated solution of lithium carbonate, distilled water, weakly counter-stained with watery eosin, dehydrated in alcohol, and cleared in oil of cloves.

Single staining with the anilin dyes, such as methyl or methylene blue, fuchsin, carbol-fuchsin, etc., gave good results where the stains were diluted to about half the strength used for ordinary bacteriological staining. But by far the best sections were obtained by staining in carbol-fuchsin at 45° C. for thirty minutes, decolorizing to a pink color in Ebner's solution, washing in water, counter-staining in

dilute methyl or methylene blue for five or ten minutes, dehydrating by passing through several changes of alcohol, and clearing in oil of cloves. Sections so treated show muscle and connective tissue fibers stained pink or red, epithelial cells, nuclei, leucocytes, and blastomycetes stained blue.

The use of Ebner's solution seems to act as a mordant, or in some manner affect the staining qualities of the blastomycetes, as they appear to better advantage in the method described than where the simpler methods are used. The objection to hematoxylin lies in the fact that the blastomyces is either very faintly stained, or else takes no stain at all.

The sections include the elevated nodular mass and the underlying tissue, also a portion of normal skin from the lip on one side of the nodule and a portion of normal mucous surface on the other side, so that it has been possible to trace the disease process through practically every step from the normal to the abnormal.

Histologically, the growth as shown in a large number of sections may be described as an epithelioma, containing in some places cell débris, etc., constituting miliary abscesses.

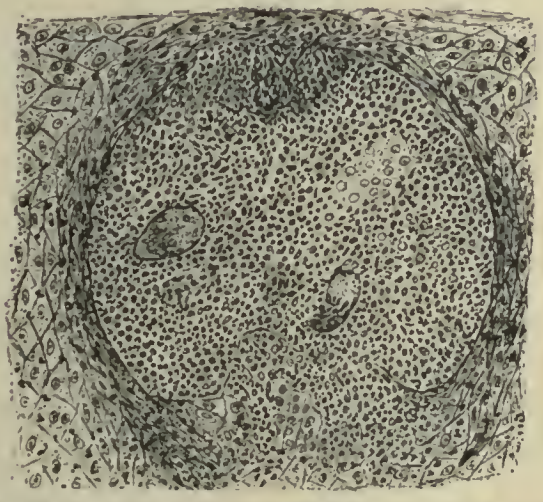

FIG. 1.—A miliary abscess in the superficial epithelial layers, containing several giant cells, fungous elements, and tissue débris. The abscess is about to rupture through the stratum corneum.

The blastomycetes are found in many of the miliary abscesses, the number of parasites ranging from one to half a dozen in a section of an abscess cavity, their absence in some of the cavities being due to the fact that that particular portion of the abscess

did not contain any. Careful estimation of the number of parasites present in a given miliary abscess by means of serial sections would probably show that several dozen or more were present.

These organisms correspond in size, shape, and process of budding and division, location in the tissues, staining properties, etc., with the blastomycetes described in cases of dermatitis by Gilchrist and Stokes, Wells, and Hektoen, in the United States, and by Sanfelice, Roncali, Binaghi, Kahane, and other European investigators, as present in neoplastic growths in man and animals. The parasite present in this case occurs as a round or oval, highly refractive, doubly contoured organism, possessing a distinct capsule from which the finely granular and usually vacuolated protoplasm is separated by a clear zone.

The mature forms have a diameter of twelve mikrons. They occur singly, in pairs, in irregular groups of three to six, occasionally in short chains consisting of four or five oval or slightly rectangular bodies. Some of these "chains" resemble hyphæ, or the beginning of a short mycelium. The most common forms are the isolated round bodies and the budding forms, consisting of a single round or oval cell, from which a single bud is given off.

That these organisms have a direct bearing on the pathological changes present in the tissue cannot be questioned after a careful study of a large number of sections—the relation between cause and effect is too apparent to admit of doubt.

As previously stated, the tumor nodule as seen in the sections contains normal skin epithelium and also normal mucous epithelium placed one on each side of the nodule. The study of the sections should begin at the border zone between the normal and abnormal tissue, in order to appreciate the distribution of the parasites and their relation to the changes caused by their presence. These changes may be summarized as follows:

1. The blastomyces penetrates the stratum corneum, stratum lucidum, and stratum granulosum, by working its way through the intercellular spaces, or possibly through some defect in the superficial epithelium, until it finally reaches the stratum Malpighii, which seems to be the natural abiding place of the parasite.

Careful examination of the sections fails to find the blastomycetes in perfectly normal epithelium; their presence is always associated with signs of tissue change. They have been found in some of the sections between the cells of the corneum and granular layer; also in the débris made up of blood-corpuscles, shreds of degenerated corneum, etc., scattered over the surface of the corneum

proper at the margins of the diseased area. Wells[3] states that in his case the blastomycetes were never found in the débris.

2. The parasite having reached its seat of activity, the Malpighian layer, it begins to reproduce itself by a process of budding, possibly by the development of a mycelium, and probably by spore formation, in a manner analogous to the parasitic fungi which cause such havoc among vegetables, plants, shrubs, and trees. It is a question whether these so-called blastomycetes are not related to the well known orders of parasitic fungi familiar to the vegetable biologist and agricultural pathologist.

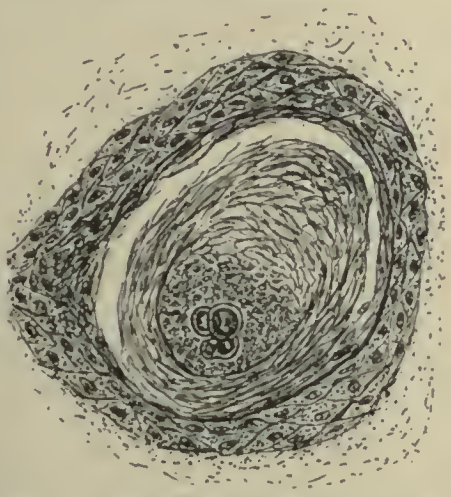

FIG. 2.—An epithelial pearl in the center of which are seen budding forms surrounded by granular débris.

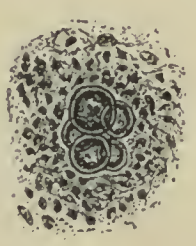

FIG. 3.—A group of five organisms in a miliary abscess cavity.

Careful examination of the sections shows that there are numerous small round bodies present in some of the "miliary abscesses" that are too regular in outline and bear too definite a relation to the large doubly contoured blastomycetes to be other than different forms of the fungus. These bodies vary in size from that of a large micrococcus to that of the nuclei of polymorphonuclear leucocytes, and some of these bodies at least are probably spores, or small forms of the fungus. Occasionally round or oval yellow or yellowish-brown bodies are found, which at first glance resemble masses of blood pigment, but which are possibly related to the easily recognized large form of the fungus. The resemblance of these yellow bodies to the yellow uredospores and teleutospores of some species of parasitic plant fungi is worthy of more careful investigation.

3. The effect of the blastomyces on the epithelial elements is that of an irritant—the irritation resulting from the presence of the parasite as a foreign body combined with the effects produced by toxins that are undoubtedly elaborated during the process of growth.

One of the earliest effects is undoubtedly a dissolutiou of the intercellular cement substance of the neighboring epithelium, along with more or less disintegration of some of the epithelial cells themselves. Leucocytes and lymph corpuscles are attracted to the point of irritation, and there results a miliary abscess. This miliary abscess continues to increase in size with the growth of the blastomycetes and the consequent elaboration of toxins. In some of the larger abscesses are found multinuclear giant cells of the tuberculous type, but repeated examinations have failed to detect tubercle bacilli.

The abscesses appear to increase in size rather by the accumulation of leucocytes than by destruction of the epithelium, for the larger ones consist of a mass of leucocytes, small round bodies that are either nuclei of degenerated leucocytes or else possibly spore bodies, or both, surrounded by layers of epithelium much flattened by pressure. Some of the larger abscesses contain loosened epithelial cells mixed with leucocytes, tissue débris, etc. Scattered through the intercellular spaces of the epithelium around the abscess cavities are to be found polymorphonuclear leucocytes.

Gilchrist and Stokes, Wells, and Hektoen mention the presence of blastomycetes within the giant cells, but the giant cells in this case do not seem to contain them.

4. Accompanying the formation of the miliary abscesses occurs a marked hyperplasia of the epithelium, which gives to the sections the typical appearance of a squamous-celled carcinoma.

Where the blastomyces has first located in the superficial layers, as in the stratum corneum, stratum granulosum, or upper surface of the Malpighian layer, a marked hypertrophy of these upper layers occurs around the abscesses, causing the elevated and nodular appearance of the growth. Some of these superficial abscesses open through the stratum corneum, discharging their contents on the skin surface and in that way helping to spread the infection.

If the infecting organism penetrates to the interpapillary processes, either by penetrating the superficial layers or traveling by way of the lymph spaces, the result is similar—marked hyperplasia of the interpapillary epithelium in variously shaped, branching downgrowths.

These polypoid branching downgrowths of epithelium penetrate the corium to a depth of several millimeters, turning and branching in various directions. The papillæ of the corium come up to the usual distance from the surface on the borders of the tumor nodule, but in the center of the growth all trace of normal papillæ is lost, and they cannot often be traced down to the deeper layers of the corium on account of the intervening epithelial tissue. The papillæ often form long, finger-like columns of tissue, bending and running at right angles to the surface, or enclosing concentrically arranged masses of epithelium, in the center of which are pearly bodies so common in epithelioma.

Wells explains these appearances by considering the hypertrophy of the epithelium to have occurred chiefly in the deeper layers of the interpapillary processes, crowding down into the corium and distorting the papillæ by irregular expansions in lateral directions, so that sections at right angles to the surface show them mostly in transverse and oblique sections.

Here and there the abscess cavities in the epithelial downgrowths apparently break into and merge their contents with an area of inflammatory cell infiltration in the corium. Such areas may contain blastomycetes and also giant cells. In these areas there seems to be a general mixing of epithelial cells, connective tissue cells, giant cells, and inflammatory cells all thrown together in an irregular mass, all outlines of normal structure being lost.

5. Some of the changes in the corium have just been mentioned, but a more complete description is necessary. The tissue between the epithelial downgrowths presents acute and subacute inflammatory changes, but only a few typical miliary abscesses.

Miliary abscesses where they occur in the corium are usually on the border-line between the tissues of the corium and the hypertrophied epithelial downgrowths of the Malpighian layer; in fact, they appear to have broken into the corium proper as a result of dissolution of continuity of tissue. Some sections contain few, if any, giant cells in the corium; others may show half a dozen or more in a single field of marked inflammatory cell infiltration.

Taking the corium as a whole, we find a great increase in the normal cellular elements; these new cells are gathered into masses, in many places resembling granulation tissue. Polymorphonuclear leucocytes are present everywhere. The subcutaneous tissue, consisting of the subcutaneous fat cushion and the underlying muscular tissue, is more or less infiltrated with inflammatory cells, plasma cells, mast cells, eosinophile cells, etc. Blood-vessels are numerous and are usually dilated and engorged.

In concluding the account of this case careful consideration should be given to the following points:

1. Clinically and histologically it would be justifiable to call the growth an epithelioma. If not an epithelioma, then we have to deal with a type of growth not easily differentiated from epithelioma, if we admit the possibility of carcinomatous growths being caused by pathogenic blastomycetes, as claimed by Sanfelice, Roncali, Binaghi, Kahane, and other European investigators.

2. If not an epithelioma, the name "blastomycetic dermatitis" proposed by Gilchrist might be used to define the growth. "Blastomycosis of the skin," a name proposed by Buschke in 1898, might also serve the purpose. Buschke defines this affection as a primary disease of the skin, due to pathogenic blastomycetes, clinically resembling carcinoma, but without its hard edges; histologically belonging to the granulation tumors, and anatomically occupying a middle ground between mycosis and infective granulation tumors.

3. Whether this growth be defined as an epithelioma or a blastomycosis, the fact remains that the blastomycetes present have acted as a determining cause in the epithelial proliferation which forms such a marked feature of the growth.

4. This epithelial proliferation, due to a parasitic fungus, should stimulate investigation to determine the possibility and probability of similar or closely related fungi being present in maliguant neoplasms and acting in a similar manner.

5. The vital necessity of thorough and intimate cooperation between the specialist in animal pathology and the specialist in vegetable biology and pathology.

6. The need of a better and more uniform classification of fungi, together with a closer study of the parasitic forms causing diseases in vegetable tissues, with a view to determine the possibility of a transference of parasitical activity from plant to animal tissue.

During the past year the writer has continued his study of the two cases of blastomycetic infection coming under his observation, together with numerous cases of carcinoma and sarcoma, and the following additional conclusions may be stated:

1. The fungous forms present in the Harsha case, and in the two cases reported by Hektoen, Hyde, and Bevan, probably belong to the same species, or closely allied species.

2. The large, round or oval, highly refractive, doubly contoured forms of the organism are probably spore bodies of the fungus, developed on short spore-bearing hyphæ, composed of loosely connected hyphal cells. These spore bodies of large size

probably break up into, or give rise to, secondary spore bodies of comparatively small size.

It is possible that the pigment bodies observed by the writer in sections and similar bodies described by Hektoen occurring in cultures may prove on further study to be a third type of spore formation.

3. The hyphæ composing the mycelium of the fungus are probably developed from the small secondary spores. The hyphal elements are small round or oval cells, loosely constructed, and are to be distinguished with difficulty from disintegrated and degenerated tissue elements from the body of the host, as they take the ordinary tissue stains. A distinct and easily recognized mycelium is probably never present in this form of mycosis.

4. The so-called miliary abscesses, containing the large spore bodies, small hyphal elements, and tissue débris, are to be regarded as part of the reproductive process of the fungus—as spore sacs or receptacles lined by delicate fungous filaments, gradually enlarging and finally discharging their contents on the epidermal surface of the host. Sometimes, owing to their distance from the surface, these spore sacs or receptacles are unable to discharge their contents in the manner described, and rupture takes place into the tissues of the corium. Thus the fungus continues to spread in the tissue from the original point of iufection.

5. The parasitic fungi producing the cases of so-called blastomycosis, blastomycetic dermatitis, and, according to the Italian pathologists, epithelioma, sarcoma, and other types of tumors, are not all true yeasts, if yeasts at all. Different types of tumors are due to different species of parasitic fungi; different species of parasitic fungi cause different pathological processes, some acute, some chronic, and some malignant.

The so-called blastomycetic growths occupy a position closely akin to carcinoma, sarcoma, adenoma, and other tumor growths, malignant and benign. *The parasitic fungi causing these growths are to be sought for and found among the numerous low forms of parasitic orders, families, genera, and species composing the classes known to mycologists as the Phycomycetes, Ascomycetes, Fungi Imperfecti, and Basidiomycetes; and also among the fungus allies, the Myxomycetes.*

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AUTHOR'S NOTE.—Recent contributions to the subject of blastomycetic dermatitis are as follows:

Hektoen, Ludvig: "The Organism in a Case of Blastomycetic Dermatitis," *Journal of Experimental Medicine*, vol. iv, Nos. 3-4, 1899. "A Case of Blastomycetic Dermatitis of the Leg," *Journal of the American Medical Association*, Dec. 2, 1899.

Owens, J. E.; Eisendrath, D. N.; Ready, C. F. W.: "Blastomycetic Dermatitis, etc.," *Annals of Surgery*, November, 1899.

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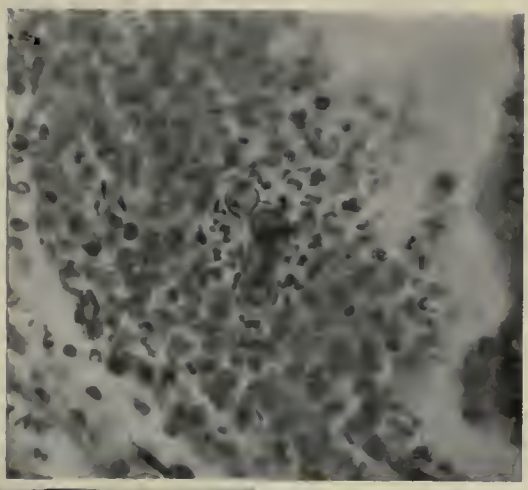
DESCRIPTION OF PLATE.

(*Photographs by Dr. W. H. Knap.*)

FIG. 1.—Chain-like row of large forms of organism in contents of a "miliary abscess." This chain is divided into four distinct bodies by well-marked transverse septa, as shown in the plate—the microscopic specimen shows the larger of the four cells about to divide into two segments. This chain-like row resembles *conidia born in chain-like rows* produced by *Cystopus candidus* or *Albugo candida*, a species of Phycomycetes, parasitic on numerous cruciferous plants, both cultivated and wild. X 1000—reduced ⅓.

FIG. 2.—General view of disease, showing the histologic resemblance of the growth to an epithelioma. The portion of the section photographed shows the following: Polypoid and lateral downgrowths of the interpapillary portions of the epidermis; epithelial nests and pearls; "miliary abscesses" in the proliferated stratum Malpighii, containing the round, oval, and budding forms of the organism, also an occasional giant cell; "miliary abscesses" originating in epithelial structure on the border of the stratum corium, but breaking into and merging their contents with areas of inflammatory cell infiltration in the reticular layer of corium; distorted papillary layer of corium; reticular layer of corium, highly inflamed and infiltrated; subcutaneous fat, connective tissue, and muscle. X 100—reduced ⅓.

FIG. 3.—Yeast-like budding forms, one containing a large vacuole, the other a distinctly and uniformly granular protoplasm. X 1000—reduced ⅓.



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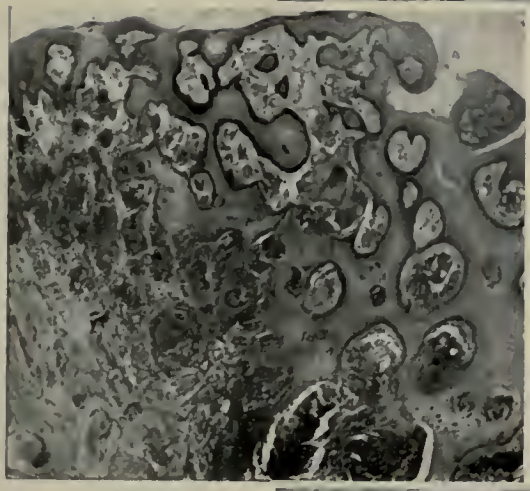

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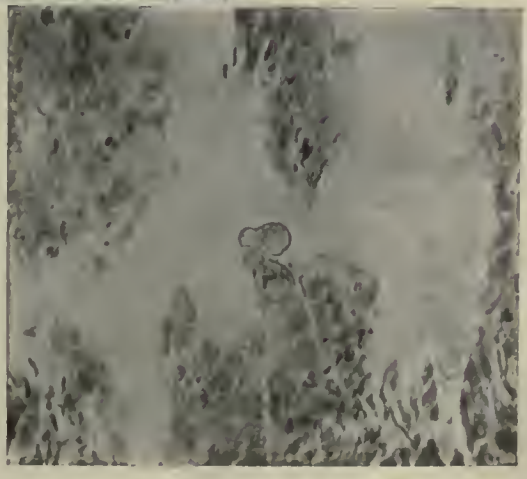

3

IMMUNIZATION THROUGH VACCINATION.[1]

BY D. P. AUSTIN, M.D., NEW YORK CITY.

In the year 1796 Edward Jenner made the first vaccination of a human, putting to the test of experience what had been learned by accident and had been known to him for over sixteen years. As a result of the vaccination of James Phipps, a new era in life-saving began in the world's history. A moderate estimate would reach into the hundreds of thousands, perhaps millions, who have been spared from one of the most loathsome and abhorred diseases—smallpox.

To-day the practice of vaccination has spread over the civilized world, and is recognized as a powerful check to the advance of smallpox, some countries even lending government aid to enforce its adoption. From the beginning and through the century it has met with strong opposition from well-organized societies, and great numbers of individuals outside of societies. Even in England, where the discovery was made, and where, perhaps, more than in any other country the blessings of smallpox protection have been realized, opposition societies flourish, and succeed in persuading thousands to refuse protection against the horrid pest. These opposition societies exist in our own country, and recently in Baltimore and other cities have been clamoring against enforced vaccination.

The grounds of opposition are found in the fact that such diseases as syphilis and tuberculosis are said to have been communicated with vaccination. The introduction of bovine virus into general use has disposed of the charge so far as syphilis is concerned, and nearly so with tuberculosis. In this connection I cite the recent instructions issued by Surgeon-General Wyman to the medical officers of the Marine Hospital Service. These instructions are so brief that they cannot become tedious. They are contained in the five following words: "Use nothing but glycerinated lymph." Reliable pharmaceutical purveyors have given such careful attention to the preparation of vaccine lymph combined with glycerin, and sealed hermetically in capillary glass tubes against the remotest possibility of extraneous infection, that I need specify no further.

Another ground of opposition arises from the fact that cases of smallpox are well known to occur after a successful vaccination; hence the belief that the effect of vaccination was *nil*, or in other

[1] Read before the New York County Medical Association, Oct. 16, 1899.

words that it did not protect. This idea is only founded in complete ignorance of what is required to give full protection.

To remove many of the false ideas which pervade the minds of medical men as well as multitudes of people who accept in general a belief in the protective value of vaccination, I shall make an attempt to set the subject out in so clear a light as to remove all the grounds of opposition to its universal adoption, and open the way for the realization of that ideal which the discoverer had of its ultimately eradicating smallpox so that its name and existence should cease to be known, save as a matter of history.

Physicians have taught, and are still teaching, that vaccination runs out in about seven years, and should be repeated every seven years through life. This idea is based on a popular notion, widespread among the people, that every particle of the body is renewed in seven years, and hence the new body should be again vaccinated to protect it. It is surprising what a hold this idea has taken on the minds of the people, many of them really intelligent on other matters. I have known many a mother to decline to have her child revaccinated because it still lacked a few weeks or a few months of the seven years she was taught to believe the vaccination would be in force. Some teachers in the public schools hold to the same idea, and protest against having all the younger classes vaccinated on the ground of their being under seven years of age.

Another of these notions that was long prevalent was that vaccination was in force in the system as long as the cicatrix remained clear and kept its thimble-pits. Inspection of the cicatrix is even yet very largely resorted to, to ascertain if the child should be revaccinated.

Among the German people are several curious ideas. If a child is vaccinated and no pock-mark results, there is no poison in that child and it need not be further vaccinated; that five pocks at once would do more than one to remove the poison from the child, and hence the practice of putting three on one arm and two on the other. Why five and not three or six is not clear.

In Ireland a custom prevailed for many years of taking the virus directly from an actual case of smallpox, under the belief that in this form of "inoculation" the disease would be milder and more fully protective than the vaccinia produced by the cowpock. In this way many hundreds of cases of severe smallpox were produced—large numbers of them fatal. The English government took radical measures to stop this practice of producing the natural pock, as it was termed, by attaching a severe penalty to any one found guilty

of making use of smallpox virus for the purpose of inoculation. In spite of these efforts to check the spread of smallpox, many continued to resort to the practice clandestinely, and I believe it is practiced occasionally to this day.

Many people believe that if exposed to the disease *without any sense of fear* they would not take it, but if overcome by fear they would most surely be infected. Some go so far as to thimk that a person may originate the disease in himself by an overwrought imagination, without exposure.

I will relate a bit of personal history which will lead up to the personal experience I have had in the vaccination of others, and to my couception of its power to prevent smallpox. I was born in a county of New York State rather remote from a city, which I did not see till after I was 18 years old. My early years were passed in school both winter and summer, and when about seven years of age my first vaccination was done by a most excellent old doctor, Rosa by name. The same physician repeated the operation at eleven years, but why I am unable to say, as I was then afflicted with an exaggerated attack of acarus scabiei, which ran all through the school. The vaccinia resulting was severe; mauy of the scratch wounds became regular vaccine pustules or pocks, as they were theu called, more than twenty appearing on the body alone. The attack kept me housed for over a week. The physician saw me several times, and predicted that, with such an attack of vaccinia taking so severely all through my system, I would never need further vaccination. Two years later there came the report that a Canadian had crossed the lake as a deck-hand on a schooner, and had been put ashore at Oswego with smallpox, and that the disease was spreading. Some of our neighbors had just returned from the city, and all thought it best to take advantage of vaccination, my mother with the rest, and she had me vaccinated once more. The resulting vesicle was just as characteristic as it had been at first, and ran the same course, but without scabies. It nevertheless upset all the predictions that vaccinatiou would take no more. No further effort to be vaccinated was made till I left home to attend school at Albany after my eighteenth year. Then, by the advice of a physician of that city, I had it repeated, with the result of a rather imperfectly developed vesicle, which ran a short course and left a small imperfect cicatrix. Soon after I arrived in New York, and located myself in the house of my preceptor, and become a medical student, he announced that he had a case of smallpox under treatment, and invited me to see the case with him if I had no fear. I said if

he would vaccinate me again, and wait long enough to know if it would take, I would see his case with him. This was done at once —waiting till the sixth day, when the thin pellicle of crust had fallen off, with no sign of any inflammatory action. Then I visited his case and assisted him in caring for it, till it fully recovered, some days spending more than an hour in close contact with the patient. I knew I was immune. Vaccination had been done repeatedly and would no longer affect my system; but in spite of this fact, and to make the test more certain, I continued to be vaccinated about every month for the next four years. Sometimes it was done directly from the arm of a child into my arm, or leg, or back—always with no effect.

In 1870 or 1871 I was appointed on the Board of Health in this city as a special inspector, and was assigned to the duty of vaccinating, first in the factory and tenement districts of 26th, 27th, 28th, and 29th Streets, west side. During my service in this district it was my regular custom to vaccinate about six hundred cases a week. After a month in this district I was sent to the east side, also a tenement district, and later on Dr. Paul Brown and myself were assigned to ten of the public schools, located between Christie Street on the south and 14th Street on the north. In these ten schools—boys', girls', and primary—in a period of about two months Dr. Brown and myself vaccinated 10,200 children, and visited nearly all the classes to record the results, visitations being made on the eighth, ninth, or tenth days after applying the virus. That carried the number of actual vaccinations under the Board of Health to over 13,000 cases, and since then the number in my own practice has raised the total coming within my direct experience to over 15,000 cases.

Realizing that never again would such opportunities be afforded for observing the effects of vaccination on such large numbers of children, I took all possible pains to obtain facts brought out by such large numbers. With no instructions from the health department as to keeping records, I conceived the plan of having the class teachers assist in this record-making, asking the principal to have each class teacher make a complete list of the names and addresses of all the children vaccinated; secondly, to learn from the children's parents whether our vaccination was the first, second, third, or fourth, and to have these facts recorded on the class lists before our visit to inspect arms. All we had to do then was to proceed with the work, which was done in the main assembly room, class after class following and moving forward with bared arms, and

being finished at about the rate of 150 to 200 in an hour. I did the scarification, and Dr. Brown applied the virus by means of quill points supplied by the board. The importance of having an absolutely clean instrument was fully understood, so I had chamois skins cut into six-inch squares, boiled in a ten-per-cent solution of carbolic acid, one of which pieces I pinned on my right knee to clean the instrument with thoroughly, after each arm was scarified, by pushing the points entirely through the chamois, and wiping both sides, a new piece being used every day. Upon inspecting results, every class had to be visited and every arm seen before records could be made. Having the list of names, and the number of times previously vaccinated, already recorded, the teacher had only to add our decision whether the work done by us was a success or a failure. To be more certain that our decision was right, we went down each aisle or row of seats, and caused each child who had a genuine vesicle to stand, the others to remain in their seats. Then the counts were made. A single class may be taken from the school in 14th Street near First Avenue as a sample: Total vaccinated in class, 44; primary cases, 2; second vaccinations, 36; third vaccinations, 6; number of genuine vesicles, 28; no results, 16; percentage of successful vaccinations, 63. Total vaccinated in this school, 1420 out of a total school attendance of over 2500. Number of successes 868, or just over 61 per cent. In the whole number of ten schools, the successful vaccinations were found to be between 60 and 65 per cent, absolutely correct figures not being obtainable by reason of the absence from school on the days of inspection of some of those vaccinated.

It was found that among the primary cases there was scarcely a failure. Of those a second time vaccinated, the percentage of successes was reduced to something over 60, and of those a third time vaccinated it was reduced to less than 30 per cent.

At this time I had made over fifty vaccinations on myself, with no result after the fourth time. Although I was rather susceptible to the influence of the virus, I had been made immune against smallpox. It is not strange, therefore, that I believe every child may be made immune by a sufficient number of vaccinations. To carry this idea out, I began almost at the very beginning of my private practice to teach that a single vaccination must not be trusted to prevent smallpox *for any length of time*, but that it must be repeated as many times as a genuine pustule can be produced. All the children of the families attended by me have been revaccinated when it became my duty to vaccinate a newcomer. Better than this would be to establish

the habit of having all revaccinated every year, until the immune condition is reached, which in my opinion is far *above and beyond the security against smallpox which is obtained by having the disease itself.* It is no uncommon occurrence to meet persons who have contracted smallpox a second and some even a third time. Within the last three months it has been my fortune to examine a man for insurance who was vaccinated in Germany with the usual five points at once. He stated that since his arrival in this country he had had varioloid twice. I cannot doubt him, because there are still some of the pits to show that his assertion is true.

During my service on the Board of Health I ran across an intelligent German who had a child of six months vaccinated in the month of May. There was a characteristic vesicle. In September following the child contracted varioloid, and died of it. Naturally enough he had not comprehended what was meant by protection from smallpox by vaccination, and declined to have other members of his family vaccinated. We do resort to vaccination to prevent the spread of smallpox, and feel some degree of confidence that it does in a marked degree limit the disease, although the subject is still a long way from being fully understood, and still farther from bearing the fruit it should.

I may be pardoned for reproducing two newspaper clippings bearing directly on these points:

"Deaths of soldiers at Manila. All possible precautions taken to prevent the spread of smallpox. Washington, March 6. The War Department to-day received the following cable despatch from General Otis, dated Manila, March 5: The following deaths since last weekly report: February 23, Private Richard L. Bryant, Company K, 1st Colorado, variola; V. Arine Barker, Company I, 13th Minnesota, variola. February 26, Harry L. Plowman, Company H, 1st Idaho, variola; William J. Donohue, Company F, 1st Colorado, variola. February 27, Sim Barber, Company L, 20th Kansas, variola. March 1, John A. Ewing, Company G, 1st North Dakota, typhoid; Frank Upham, Company C, 1st North Dakota, dysentery; Joseph Marx, Company C, 1st Montana, variola; George L. Doran, Company F, 18th Infantry, diarrhea and pneumonia. Died of wounds received in action—February 27, Private H. M'Lean, 1st Washington; Howard A. Olds, 20th Kansas. February 28, Edward S. Moore, Company G, 1st Montana. With reference to the number of deaths from varioloid or smallpox (the Washington correspondent adds) mentioned in General Otis's weekly report to-day, Surgeon-General Sternberg said that there were no additional precautions to be taken against the spread of the disease. Everything possible had been done, and every preventive measure taken. The troops at Manila have been vaccinated, and each regiment has been thoroughly searched for persons who have not taken advantage of this guard against smallpox. In one instance a regiment was canvassed four times in order that every one should be vaccinated. When a case appears the patient is at once isolated, and proper measures are taken to effect a cure and prevent the contagion from spreading."

"Health of the troops improved. Washington, March 25. Reports have been received at the office of the Surgeon-General showing that the health of the troops in the Philippines has greatly improved. The sick-rate has decreased from 13 to 9 per cent. There is less malarial and typhoid fever, dysentery, and other diseases than noted in earlier reports. This indicates that the troops are becoming acclimated. Smallpox has been unusually severe, owing, it is believed, to the insufficient vaccination of the troops which departed from the Pacific coast. Many of the men in the Philippines were vaccinated by virus received from Japan, which was not effective. The Surgeon-General has now established a vaccine plant at Manila. The troops in the Philippines appear to be more susceptible to smallpox than those in the West Indies. Although smallpox has been severe in Porto Rico, none of the troops have been stricken. General Henry has ordered the entire population of eight hundred thousand vaccinated, and in order to secure material has established a vaccine farm at Ponce. In the Department of Santiago there have been over five hundred cases of smallpox among the natives, but the troops have not suffered. The army regulations require vaccination when men are enlisted, but it is said they evidently have been carelessly observed on the Pacific coast with men sent to the Philippines."

If these official reports of General Otis at Manila are followed, it will be found that more than a hundred men died of smallpox. The disease might have been prevented had the real value of vaccination been understood and properly applied. These troops, as the clippings state, had been enlisted mostly in the West — from Minnesota, Iowa, Oregon, Washington, Missouri, Nebraska, Dakota, Colorado, and Kansas; and many of these young men, born and raised in the States named, had never been vaccinated *even once.* If vaccinated at all in camp it was only once, and the virus was declared to be of little worth. My statistics of school vaccinations (done with excellent virus) show that not more than a third, more likely not more than one in ten, had become immune by a single vaccination.

So far as may be learned from these clippings, or other newspaper articles, there was no attempt to revaccinate, and it looks to me as if the Surgeon-General was patiently waiting for the seven years to expire before applying the virus a second time. His sole anxiety seemed to be to get every man *once vaccinated.* There was ample time for these men to have been vaccinated three times between the date of enlistment and their landing in Manila—once in camp, once before sailing from San Francisco, and again before landing in the Philippines.

Referring to the difference in susceptibility of the troops to contract smallpox in the Philippines and in the West Indies, it will be noted that nearly all the troops in the West Indies were enlisted in

the East and South, where the practice of early vaccination is more general, and where nearly all the repetitions are made; hence the men in the West Indies were far better protected than those in the Philippines.

So far vaccination has only been treated of as a means of preventing smallpox. It has another important field of usefulness, which is as a test of the immune condition. For example, if I wished to ascertain to a *certainty*, for your personal satisfaction, whether any one of you brother doctors could possibly have smallpox, I should vaccinate you with the best obtainable lymph, and see if in eight to twelve days a genuine vaccine vesicle could be produced. If it could, I should know that you were not immune on the day vaccinated, and might under certain conditions of exposure contract the disease. In a month I should try again, and keep trying till no vesicle resulted; and then once or twice more, *to be absolutely sure*. When no further vesicle can possibly be produced by a carefully made vaccination with fresh, good lymph, it is impossible for that individual to contract smallpox. That state, which I have described as the *immune condition*, may generally, by repeated efforts, be reached by the time the child is five years of age, and lasts through the whole life.

12 WEST 95TH STREET.

CURABILITY OF EPILEPSY, AND HOW IT MAY BE ACCOMPLISHED.[1]

BY WILLIAM P. SPRATLING, M.D.,

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The close observer who has had an opportunity to study repeatedly and in detail many epileptic seizures will not fail to agree with me when I say that the usual definition of epilepsy found in most text-books, to the effect that it is "a disease characterized by tonic and clonic spasms and followed by loss of consciousness," does not describe the condition with scientific accuracy in a large percentage of cases. Many cases have tonic convulsions only; others, clonic convulsions; while a larger number have incomplete loss of consciousness. In the varying types of the latter class, consciousness may be disturbed slightly, or profoundly, or be completely lost.

From the symptomatology of the disease we must reason back and study the particular area of the brain involved at the time of the seizure. Many cases exhibit convulsive phenomena that appear to be limited to some part of the motor area in the brain, governing one extremity of the body. Other forms of epilepsy show themselves by psychic disturbances that may or may not be combined with fine muscular movements, such as fibrillary twitchings about the mouth or fingers. The third class show evidences that both the motor and sensory areas in the brain are involved, either simultaneously or progressively. A convulsion may begin in the right thumb and extend in the following order: The right hand, the forearm, the upper arm, the side of the face, the chest, the right leg; it may stop before covering a greater field in the brain, or it may spread with rapidity and involve the entire brain.

I would divide epilepsy in its initial stages into two groups: the false includes such cases as may be traced to a true physical cause, recent in origin; the true includes cases which have a congenital or acquired organic defect or deficiency of the brain. The treatment of the false epilepsies is based on the sound therapeutic principle that in any disease the first object is to remove the cause. If a direct relationship can be established between strained eye muscles, pressure of bone on the brain, or the presence of poisonous

[1] Read at the annual meeting of the New York State Medical Association, held October 24 and 25, 1899.

gases in the alimentary canal, then the only rational thing is to remove the cause; bearing in mind that we have at first to do with reflex epileptic phenomena only, and not the true disease. Time in such cases is invaluable, for healthy nervous tissue is quick to learn, and habit epilepsy is easily acquired.

I wish it were in my power to impress upon those present the great importance of the early treatment of such cases. We have learned that many cases of nocturnal epilepsy go unrecognized and untreated until the disease is well established, and I have known of well defined diurnal cases that were regarded at first as simply "fainting spells" or "spasms," and indifferently treated until the hope of cure was nearly passed.

Dr. Abram Jacobi said to me some years ago when I applied to him for his views about the convulsions of dentition as a cause of epilepsy, "Let us remember that every convulsion, ever so slight, may produce cerebral hemorrhage with all its disastrous consequences—epilepsy, idiocy, imbecility, and insanity."

Five years later it was my privilege to have shown to me in the Pathological Institute in Berlin, by Dr. Virchow, minute spots of softening in five brains which had come from small hemorrhages. Two weeks after that I asked Dr. Hughlings Jackson what he believed would be found ultimately to be the cause of what we now call idiopathic epilepsy. He promptly replied, "In many cases, minute hemorrhages in the brain."

A few years ago I saw a girl, eight years of age, who developed epileptiform convulsions, due to gastrointestinal inflammatory changes. A skilled physician in this city gave a favorable prognosis. Shortly after the child suffered a large number of severe seizures that produced what we now term, in some cases when the results are not so severe, "exhaustion paralysis," but which in this case went further and actually destroyed, to a large extent, the integrity of the area in the brain that controlled the left shoulder, arm, and hand. The child now promises to be a confirmed epileptic, mentally dull, and may be later on an object of epileptic dementia, with partial left epileptic hemiplegia. It is essential, therefore, to early distinguish between true and false epilepsy, to locate early the site of the disturbance, and as quickly as possible remove it.

When we come to what we regard as true epilepsy, we have quite another matter to deal with. Sir William R. Gower states that 75 per cent of all cases of epilepsy develop under the age of 20 years. Out of 485 cases admitted to the Craig Colony, 85 per cent of them developed the disease under the age of 20 years. This

shows the importance of heredity in this disease. Of 145 tabulated cases, twenty developed epilepsy under the age of six months; in sixty-eight it began between the ages of 10 and 16 years, the period covered by puberty. Cases of epilepsy arising *de novo* after the ages of 25 to 30 years may nearly always be set down as due to recent causes, the type of convulsion being at first epileptiform. The prognosis in these cases is better, if they are not organic, than when the disease begins at an earlier period.

We have now some foundation upon which to determine lines of treatment best adapted to cases arising from different causes. I will briefly review the main points in the foregoing. We must distinguish between true and false epilepsy—that is, whether the convulsive phenomena are due to some ascertainable irritant that, if sufficiently early removed, may cause cessation of the convulsions, or whether there is primarily an organic defect or deficiency in the brain. A third class have the essential predisposition only, and are ready to manifest convulsions under proper stimulation.

The treatment of the first class of cases is much easier and more often results in cure than the last. The convulsions of early life come under this head, such as are usually due to dentition, combined or not with a rachitic constitution; also those caused by indigestion, with its poisonous products in the alimentary canal, acting on an oversensitive nervous system; or injuries to the head, common in early childhood. The treatment of such cases is apparent, but I desire to emphasize the necessity of looking closely into the ancestry of the child before treatment is begun or a prognosis given, for you may find that what appeared to be the real and only cause of the convulsions was merely the exciting cause, and that heredity had already prepared an easy way for the disease.

I would especially urge against the giving to young children of drugs whose chief therapeutic action is to suppress the convulsive phenomena only. We ought not to be satisfied with this, for in administering such drugs there is danger of masking what may be valuable objective indications of the disease, and experience teaches that we shall largely destroy the digestive and assimilative functions of the child, something we should guard against above all else. Were I to tell you the number of cases I have seen that have gone for years on a routine suppressive treatment, the bromide of potassium being the favorite drug for this purpose, and how it destroyed the digestive and assimilative functions of the patient, I might tempt credulity further than would be wise.

If a stream of water was flowing from the end of an iron pipe and

we attempted to stop its flow with a plug of earth, we might succeed for a time, depending on the water pressure; finally the water would break forth again in greater volume and do more damage than ever. The true way to have stopped the flow would have been to cut off the source. The same principle applies in the use of the bromide of potassium in epilepsy. I am frank to say that I have yet failed to see a case in which the use of this drug cured the disease. I have seen many cases in which the fits were suppressed for months at a time, but the administration of the drug had to be continuous and in large doses to do this; immediately the drug was withdrawn the convulsions returned.

Church, in Nervous and Mental Diseases, by Church and Peterson, page 576, edition 1899, says: "Cures by the bromide treatment are not to be expected. It is at best a palliative treatment, and one fraught with great disadvantage." We, at the Craig Colony, reached this conclusion three years ago, and personally I have not prescribed the drug for any case of epilepsy since that time.

The treatment of the second class is more difficult than the first, and they may be considered under the following subdivisions:

1. Cases due to cerebral hemorrhage in early life and followed by contractures and deformities.
2. Cases due to trauma affecting the brain.
3. Cases due to specific infection of the brain.
4. Cases due to brain tumor.
5. Cases due to cerebral hemorrhage occurring late in life, in which the convulsions that often follow may be mistaken for true epilepsy.

The treatment of the first class can hardly be undertaken with hope of complete cure; but an experience of several years, covering the treatment of approximately fifty cases at the Craig Colony, suffices to show that under long-continued physical, surgical, dietetic, and medical treatment a large percentage of such cases can be greatly benefited. Let the child live as much as possible out of doors and make use of as many physical movements as may be at its command. Endeavor to regenerate the impaired area in the brain by the systematic use of the proper parts of the body. Well directed gymnastic exercises will help to do this. For the correction of deformities, even though such correction make for no greater gain than freer action on the part of the child, the orthopedic surgeon should be consulted. We must not overlook the importance of diet in all cases of epilepsy, but it is not so important a factor in this class of cases, where the epilepsy is due to organic lesion, as in others not dependent upon such cause.

In the treatment of cases due to recent trauma the same principle applies that I have before spoken of—that is, as quickly as possible remove the cause; these cases, in my opinion, are not true epilepsy, but belong at first to the group of so-called reflex epileptic phenomena. If a child receives an injury to the head and a piece of bone presses upon the skull and convulsions follow, the only thing to do is to remove the piece of bone as quickly as possible. It would be good surgery to do this before convulsions develop.

I feel it worth while to again repeat what has before been said about habit epilepsy. The convulsive habit, once established, is hard to break; therefore, the importance of removing the cause as quickly as possible.

In the treatment of cases due to trauma of long standing, in which deep-seated changes have occurred in the brain, and which changes are beyond the power of the surgeon's knife to remove, I think that great care and judgment should be exercised before operative procedures are decided upon.

In Nervous Diseases by American Authors, edited by Dercum, 1895, page 304, we find the tabulated results of forty-four cases of epilepsy that have been operated upon. In ten, the results stated by the reporter were left blank. Under "Remarks" by the tabulator it is stated, "Time of observation after operation not sufficient," and it is noted that this varied from one month to three years, the latter period being in one case only.

The operators reported ten cases cured; and it is interesting to note the length of time that had elapsed between the operations, and the date on which the case was regarded as cured: One, 3 months; one, one month; one, 10 months; two, 4 months; one, 43 days; one, 5 months; one, 3 years; two, no time given. Two others were marked by the operator thus: "Recovery: Recurrence of Fits." The one recovery that lasted three years, barring two fits just after the operation, was in a case where the kick of a mule had been received in the left frontal region, twelve years prior to the operation. In the meantime the fits had been irregular in occurrence. As a fair and just criticism, no one can object to the statement that but one case only of the forty-four showed improvement or recovery that could be positively stated as likely to be of lasting benefit.

In the issue of the *Philadelphia Medical Monthly* for January, 1899, I reported seven cases of trephining in epilepsy, all of them having been admitted to the Craig Colony after the operation, and all without any permanent beneficial results. Since that time two additional cases, making nine altogether, of trephining in epilepsy

have been received at the Colony; nor did any good results follow the operation in the two additional cases. It would be wrong to argue that because these few cases were not benefited or cured by operation on the brain, trephining for epilepsy is never justifiable. I reported the above seven cases to illustrate a principle that I now reiterate, and that is, that I believe it is wrong to apply the knife to an epileptic's brain years after an injury is received and years after the disorganizing effects of the convulsions have permeated the entire brain, causing a wide-spread and disastrous lesion that the knife cannot reach. I believe the principle of *non nocere* should be made to apply in a large percentage of such cases.

Occasion was taken in the same paper to call attention to the desirability of being sure that trauma was the real cause of the convulsions before the operation was decided upon, and especially would we like to exclude hereditary influences before operating. By careful inquiry we found that many of the cases above referred to had exceedingly bad ancestral histories, and in some of them we firmly believed that the epilepsy was not due directly to trauma, and that it acted as an exciting cause only. In some of them, in fact, degenerative changes in the brain had taken place to the extent that the mental condition of the patient was permanently unsound before the operation.

I do not wish to be understood as arguing absolutely against surgical interference in epilepsy; the only point I desire to make is that we should carefully ascertain the true cause of the convulsions before such an operation is performed.

The *British Medical Journal* of September 16, 1899, in giving the transactions of the last meeting of the British Medical Association, credits Dr. Fletcher Beach with having said: "I have seen a few cases of Jacksonian epilepsy; in one case craniectomy was performed, and some thin pieces of bone which were apparently pressing on the dura mater were removed. For a time the fits ceased, but they recommenced, and the child became strange in her manner and was so irritable and spiteful to the children in the ward that she had to be discharged."

Cases due to specific deposits in the brain, such as gumma, are more amenable to treatment, and cures in these cases may often be effected, provided they are taken in time. The treatment for this class is the same as that for general syphilitic infection. Some cases of epilepsy have been reported as being due to tumors of the brain.

In the spring issue of *Brain*, 1899, several cases of this kind are

reported by Bramwell. It is questionable whether a simple small non-malignant tumor can cause true epilepsy. If the tumor is malignant and destroys brain substance, or so large in mass as to seriously destroy or interfere with the functions of the brain, convulsions may be produced that later may run into true epilepsy. The treatment of such cases can only be undertaken in conjunction with the surgeon.

Cases of pseudo epilepsy, or epileptiform convulsions, which frequently follow cerebral hemorrhage in persons of middle life, must be treated just as ordinary cases of apoplexy. One such case that I now recall in a man 58 years of age, and whose epilepsy was said to have developed eighteen months prior to his admission to the Colony, was recently discharged as recovered—that is, the result of the hemorrhage in the brain that gave rise to epileptiform convulsions was removed.

And now we come to that great class whose disease is regarded as idiopathic. That there must be a cause for the convulsion is true, but our skill is not yet sufficient to discover it. For practical study we will divide these cases as follows:

1. Those presenting subjective physical aura.
2. Those presenting subjective and objective mental aura.
3. Those having no aura at all.

An illustration of the first type would be those cases that have a headache, or a gastric disturbance, immediately before a seizure. An illustration of the second, those that are apprehensive and in which one can see that the patient is mentally disturbed. An illustration of the third, the patient falls sharply without warning.

I think the aura, the first sign of an oncoming seizure, has in many cases great significance, as it points to the seat of the initial cause or origin of the convulsion. If we find that the attacks are preceded by a headache, no matter of what type, digestive, neuralgic, gastric, or toxemic, we should look for the cause and remove it, and it is always a good plan to look for the simpler things first.

I remember a man who came under my attention some years ago, suffering from marked delusions of persecution, accompanied by an intense "roaring sound" in his ears. I examined him carefully, finally testing his hearing, which was defective on one side. I immediately washed out the ear and was surprised to find several large pieces of dried tobacco come away. I saw him twelve hours later; the roaring in his ears had entirely disappeared, and with it went the delusions of persecution.

We received a man at the Colony who had been trephined for

epilepsy. For some hours before his attacks he complained of headache. We found, after a careful and exhaustive examination, that he suffered from a uric acid diathesis. We put him to bed and treated him in accordance with the principles laid down by Haig for such cases, with marked benefit.

The best we can do in those cases that are suddenly stricken without any warning is to have them carefully watched to note, if possible, the very first evidence of physical aura; such as the twitching or jerking of a hand or foot. I recall one case where the aura commenced in the form of a mild jerking in both hands simultaneously, the movements increasing in almost rhythmical order as to time and force, until the arms were thrown above the head; then, unless the attack was aborted, as was done in this case for several months, it would come on. In these cases there often follows a weakening or partial paralysis, the degree of which depends upon the severity and number of attacks and the stamina of the individual. If the left arm is weakened or exhausted out of proportion to the right, then we may fairly assume that the chief center of disturbance at the time of the seizure was in or near the left arm center in the brain.

To speak in detail of the treatment of idiopathic epilepsy is impossible in so brief a paper, so I will give as concisely as I can the substance of the treatment of such cases at the Craig Colony, where we have discharged many cases as cured. And I will add that while it may be difficult to carry out the home treatment of an isolated case along the same lines followed at the Colony, it can be largely approximated, and with good results.

1. The colonizing of the patient means that he is placed under such restrictions that we can at all times have entire control of his acts. This is most essential, for the nature of his disease causes him too frequently to disregard the laws of health and indulge in many dissipations.

2. We treat him as an individual at first, along broad hygienic lines, for many come to us in poor general health, and the first demand is that they be built up, reconstructed physically.

3. To do this we employ a diversity of means: Medicines, systematic occupation, gymnastic exercises, baths, special feeding, and the use of such moral agencies as may be essential.

4. All the while he is being studied for aura; for the presence in the blood, urine, or other secretions of noxious substances that may cause or help to cause the disease.

5. He must eat only such food and only in the manner prescribed for him. We regard this as most essential.

6. He must not overeat, for by tradition founded on fact he is apt to gormandize; and if he is habituated to the excessive use of tobacco he should be cautioned to be moderate in its use.

7. He is not permitted to use alcoholic stimulants in any form or to any extent. Tea or coffee, if properly made for him, he may take in moderation without harm; but it is seldom properly made for him.

8. At the Colony every epileptic received is made to undergo a complete change of life. If he was of sedentary habits he is put out in the fields, under the sun and in the air—not abruptly, but gradually. His entire life, as far as can be, is thrown into new channels. If, when received, he is feeble, as many of them are who have suffered from long neglect (and I am speaking of the indigent classes), he is put into the hospital, fed on light nutritious foods, and every effort made to build him up.

9. If we see at any time that he fails easily under any mental strain, such as study or close reading, he is made to quit such pursuits and use his body only.

10. If his body is big and strong and he is weak intellectually, then the opposite course is pursued, the object always being the coequal development of the mind and body—no vitiation of one at the expense of the other.

11. If he has any natural bent or inclination in the way of study or work, it is recognized and encouraged, for mental occupation in the treatment of epileptics is an important factor.

Due heed to the foregoing over a sufficient time will, as we have learned by experience, cure from six to eight per cent of all cases that come under our care.

In 1898 seven patients were discharged recovered from the Craig Colony. All of them were kept at the Colony two years after the last seizure, and to study the effectiveness of the cure they have been kept under observation by correspondence since. One, a young woman congenitally of feeble mind, was discharged under protest, as her friends desired her transfer to an institution for the feeble-minded. We felt that under unfavorable conditions as to food, habits, and environment, her attacks would recur; and they did, and she was returned to the Colony. The remaining six have had no seizures since they left the Colony. They acquired various trades while under treatment, and are now earning their living. One of them is deserving of brief mention because his cure was little short of miraculous. It was a young man who had been an epileptic for eighteen years prior to his admission.

His attacks were mixed in type and occurred for fifteen years at the rate of three to five in twenty-four hours, both by day and by night. He presented no marked evidences of physical infirmity, beyond a slight halting gait, due probably to an early palsy, or an exhaustion paralysis. He was extremely irritable in disposition querulous and effeminate in speech and manner, and entirely destitute of ambition. Concisely summed up, he was a product of defective ancestry, defective early training, general early arrested development; on all of which was engrafted the destructive effects of frequent epileptic seizures, and of the long-continued use of the bromides. We classed him among the cases of malnutrition; put him on a generous diet of proper food, and on tonic remedies that build up and do not destroy; protected him from himself by a vigilance that was never relaxed; and as soon as he was able placed him as apprentice to a farmer. His regeneration was remarkable. The first month he had the usual number of attacks, 110; the second, 98; the third, 3; and no more after that. Later he acquired the printer's trade. Did enough work for the Colony in two years to reimburse the State for the cost of his cure, and is to-day supporting himself and his mother by the results of his labor as a printer.

Let me add that the colony system at the Craig Colony is yet far from complete. What may be done in the way of curing epilepsy when the Colony has for some time made use of the facilities that are to come in the way of scientific investigation and study of the disease just now beginning, when the schools, shops and trades, amusements, and perfect home life are all acting in forceful harmony for the attainment of one end, cannot now be predicted. I wish further to emphasize that in a modified way the valuable principles of colony treatment can be made to apply largely in the home treatment of this obstinate disease.

BOOK REVIEWS.

A Text-book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D. Third Revised Edition. Price, $5.50. Philadelphia: W. B. Saunders. 1899.

The first edition of Anders's work was published in 1898, and within a period of less than two years a third edition has been called for. The second edition of the work followed soon after the publication of the first, and it was found unnecessary to make important alterations. The present issue, however, has received careful and thorough revision, especially in the department relating to infectious diseases. These changes and differences have not increased the size of the book, the third edition having 1292 pages, while the first had 1287. The same general style is preserved throughout.

In the chapter on infectious diseases we are told that yellow fever is an acute, highly infectious, but non-contagious endemic and epidemic disease. The author avoids the Sanarelli-Sternberg dispute over the origin of the disease, leaving the controversy of the bacillus X and the bacillus icteroides for later decision. In the discussion of typhoid fever the importance of a liquid diet and of the Brand method of treatment is maintained. There is no reference to specific medication in the treatment of this affection.

In the article on vaccination mention is made of Hutchinson's method of removing the epidermis by an application of liquor potassæ, a method which should be used with greater frequency. A judicial attitude may be a valuable trait in a text-book writer, but we think it is carried too far when an author says that "humanized virus is still preferred by some, and when this is used the arm to arm vaccination is best. The lymph is taken from the characteristic vaccine virus of a healthy child and applied directly to the arm of another. The virus may be dried and prepared for use as in the case of bovine virus." Even though humanized lymph is preferred by some, we believe that they are a very small percentage of practitioners. The concensus of the profession to-day is that vaccination should be performed with bovine virus, and by far the best form of virus is the glycerinated lymph, to which no reference is made; this is a serious omission in a book published as late as 1899.

The gravity of pertussis is scarcely appreciated either by the physician or the public. There is no specific for the disease. It is a notoriously unsatisfactory disease to manage, and if we put our whole confidence in a single remedy, we are likely to meet with keen disappointment. The remedies that the author has found most useful are hydrogen peroxide used as a spray in the nasopharynx, with asafetida occasionally employed for the paroxysms. His second choice as an antispasmodic is the tincture of belladonna, given in doses of one drop for every month of the child's age in increasing doses until the toxic effects of the drug are reached. With bromoform he was disappointed. It did not shorten the disease and seemed to stupefy the patients. The coal-tar products, pushed to the toxic limit, likewise modified the disease but slightly.

In the treatment of tetanus the general hygienic surroundings of the patient are to be attended to, and chloral hydrate and calabar bean administered. Tetanus antitoxin is mentioned, but no opinion is given as to its value, further

than the statement that intracerebral injections are of no advantage. Stintzing is quoted as giving the mortality-rate of Behring's serum as thirty-five out of ninety-five cases. It is said that the serum is not curative, but prevents further infection. There is no reference to Bacelli's treatment of tetanus by hypodermic injections of carbolic acid.

The chapter on diabetes is very satisfactory. The author recedes from the strict antidiabetic diet recommended by some, though he gives a strict diet which he uses to note the effects of withdrawing all sugar and carbohydrates. He significantly adds: "Nothing is gained by relieving the glycosuria and polyuria, if it be accomplished at the expense of the general strength of the patient. Diabetes, arthritis deformans, gout, rickets, scurvy, and purpura form the division of constitutional diseases. Obesity is placed with the intoxications, for what reason it is difficult to see. The numerous theories which prevail at present regarding the nature of gout are irreconcilable, but the author thinks that there is an excessive accumulation of solids and liquids, with a consequent disordered metabolism growing out of the effects of imperfect physical development combined with too little exercise. Associated with this may or may not be a defective elimination of waste products. Lithemia is classed as a separate disease characterized chemically by an excess of uric acid in the blood, and clinically by various digestive, circulatory, genito-urinary, and nervous phenomena. In assigning a separate heading to lithemia, it is hoped to avoid a common error of attributing its symptoms to other causes.

Space will not permit us to go farther in the review of this work. We can only repeat regarding this third edition the favorable opinion given of the first. It is an accurate statement of the recent advances of medical science. It has evidently been prepared by a practical teacher and a man of wide experience in internal medicine. An overcritical reviewer could find omissions and criticize the arrangement, but the few faults would serve only to emphasize the general excellence of the work. It is especially strong from the standpoint of treatment, the directions being full and easily followed.

NERVOUS AND MENTAL DISEASES. By Archibald Church, M.D., and Frederick Peterson, M.D. Philadelphia: W. B. Saunders. 1899.

The work of Peterson and Church is divided into two parts. The first, contributed by Dr. Church, is composed of 600 pages and deals with neurology. Part II, composed of 216 pages, is a work on mental diseases by Dr. Peterson.

The part on neurology is an exceedingly well arranged text-book, written largely from the standpoint of the clinician. It is especially valuable from the fulness of detail with which various neurological problems are discussed. The opening chapters deal with the examination of the patient, and the importance of the various elements in the history of neurological cases is emphasized. This makes it one of the best books for the student and the general practitioner.

The section on mental diseases, by Dr. Peterson, is a marked departure from the average text-book for the last twenty years on mental diseases. There is extended discussion of degeneracy and the stigmata of degeneracy, and their relation to mental disease. Dr. Peterson lays down just conclusions regarding the relations of stigmata to mental disease. Previous writers have called attention to the relation of the so-called signs of degeneracy which in themselves

are not symptoms of mental disease, but simply point to a probably inherent structural defect in the individual. The general considerations of mental disease, such as symptomatology, etiology, and treatment, are followed by a description of the special forms of mental trouble, which include mania, melancholia, circular insanity, epileptic insanity, paretic dementia, dementia, and paranoia, the latter being the longest chapter, excepting the closing one, which discusses idiocy in its various phases.

The part on mental diseases, like that dealing with neurology, is prepared almost exclusively from a clinical standpoint, with comparatively little reference to the pathology of these affections.

A Treatise on Surgery. By American Authors. Edited by Roswell Park. A Condensed Edition with Revisions. New York and Philadelphia: Lea Brothers & Co. 1899.

The original edition of a Treatise on Surgery by American authors, edited by Park, was issued in 1896. It met with immediate success, because of its excellent arrangement and the further fact that it numbered among its writers the leading American surgeons. The first edition was in two volumes, covering about 1600 pages. This condensed edition contains 1262 pages. Advantage has been taken in issuing a new edition to revise the work to date, though in the main the work is not altered. A novelty in surgical works is a chapter on surgical pathology of the blood, which includes a study of thrombosis, embolism, fatty embolism, and also the corpuscular elements of the blood. The Metchnikovian phagocyte theory is fully exploited. That Park regards phagocytosis as a most important pathogenic process is evident, as he says: "To regard phagocytosis as an affair mostly of certain tissue cells and invading bacteria would be altogether too narrow a view to take of it. It is really a process of greatest importance and of constant performance in our systems."

To the first edition of this work we gave a favorable review, according it a position among the leading text-books of surgery in English. This second condensed edition contains nearly as much matter as the former; it has been bound in one volume, which somewhat reduces the cost and facilitates reference, but as a readable book it is somewhat inconvenient owing to weight and size. The last edition has the same wealth of illustrations as the former, containing 625 engravings and 37 full-page plates in colors. The majority of the illustrations are original.

Interstitial Gingivitis, or So-called Pyorrhœa Alveolaris. By Eugene S. Talbot, M.D., D.D.S. Philadelphia: The S. S. White Dental Manufacturing Co. 1899.

The present work is devoted to the discussion of a topic of great interest not only in dental but in medical science, especially in the department of hygiene and prophylaxis. Nothing could better illustrate the wild chaos of pathology from which dentistry has emerged than the history of this disease given in the present volume. Under the etiologic phases of pathology which have alternately swayed medicine the conception of the present disease has varied widely. In the light of its known clinical history, its ordinary name is an obvious misnomer. The first question in etiology in the present day is naturally one involving the issue of bacterial origin. Dr. Talbot to determine this question had investigations made independently by several

observers, including such well known bacteriologists as Drs. L. Hektoen, W. A. Evans, and M. Herzog. From their results it is evident that as tested by Koch's law no specific pathogenic bacteria exists in the disease, and that the pyorrheic stage is due to the secondary infection by pyogenic microbes. The carefulness with which these investigations were made casts great doubt on the recent claim of Younger, especially as he did not test the pathogenic qualities of his alleged bacillus by Koch's law. Indeed, this bacillus resembles one found by Dr. Evans. Younger's results are but a simulacrum of those of Dr. Miller. The discussion of treatment is terse and clear. The book will well reward perusal by physicians, and merits place in every dental and medical library.

A Laboratory Manual of Physiological Chemistry. By Elbert W. Rockwood, B.S., M.D. Price, $1.00. Philadelphia and New York: The F. A. Davis Co. 1899.

In the preface the author says that the results obtained in the University of Iowa from the laboratory course have firmly convinced him of the superiority of this method of instruction. He believes that it is only by practical work that the student can become familiar with the physiological changes in the animal body and their products. A small work has therefore been prepared to impart accurate knowledge through the student's own observation.

The work begins with a study of the carbohydrates, the first reactions dealing with starch and the simple experiments performed for its identification. Then follows dextrin, glycogen, cellulose, glucose, lactose, sucrose, and maltose. Naturally, the experiments in this first group are quite simple and deal with the ordinary observations found in works of physiology. By some it might be thought that it was unnecessary for the student to perform these experiments, some of them being so simple that a mere statement of the reactions would seem to be quite sufficient. These, however, form an excellent foundation for the more complicated work which follows.

The next subject is the fats. These present chemical formulæ somewhat more complex than the carbohydrates, and the experiments directed are somewhat more elaborate. After the fats the proteins are considered, and these naturally lead into the subject of fermentation. The work so far includes 136 experiments, which form an admirable basis for the examination of the physiological fluids which next follow. The first of these to be considered is saliva, and then gastric juice, with a study of digestion and the reactions necessary in determining the different constituents of the stomach secretion. Next in order follows the pancreatic juice, the work closing with a study of the blood, bile, and urine. It contains but 204 pages, and is bound with blank leaves for note-taking.

Clinical Lectures on Diseases of the Heart, Lungs, and Pleura. By James M. Patton, M.D. Chicago: The Clinical Review Publishing Co. 1899.

These lectures were published first in the *Chicago Clinical Review*, having appeared from time to time during the past few years. They are now collected, bound in one volume, given an index and a title. Their publication in this form makes them of much more value. They make an excellent treatise on diseases of the heart, lungs, and pleura, prepared directly from a clinical standpoint; treatment is especially considered.

EDITORIAL COMMENT.

THE COMPARATIVE RESULTS OF THE MODERN TREATMENT OF DIPHTHERIA AND TYPHOID FEVER.

Not long since R. H. Fitts published in the *Boston Medical and Surgical Journal* an elaborate statistical study of the cases of typhoid fever treated in the Massachusetts General Hospital during the last twenty years. The figures which he has gathered clearly show that there has been no material reduction in the mortality from that disease since the time when it was treated energetically by purges, bleeding, and large doses of calomel. To those who have followed the latest dicta, that fevers should be fed and supporting measures should be adopted, this series of figures will prove most disappointing. Those medical men educated in the latter part of the century wonder how patients survived the old heroic treatment in the first decades of the present era. An explanation has been gravely advanced by some that the people were of more resistant fiber in those days and could stand more that was heroic in the way of treatment. Perhaps this may explain the statistics of the Massachusetts General Hospital. A lowered vital resistance on the part of patients would, of course, offset the increased efficiency of modern treatment.

Not long since a similar study was made of the treatment of pneumonia in one of the large London hospitals, and it was found that the modern supportive treatment, so-called, was actually accompanied by an increased mortality, as compared with the older purging, bleeding, and calomel treatment.

In contrast with the gloomy record of these two diseases, we can refer with pride to the discussion on the treatment of diphtheria with antitoxin, before the Section of State Medicine, at the last meeting of the American Medical Association. It is printed in full in the December 16 issue of the *Journal of the American Medical Association*, and is the subject of editorial comment. In Denver the mortality from diphtheria is reduced from 28.7 per cent in 1894 to 8.8 per cent in 1898. The mortality of the cases treated with antitoxin was 3.5, and of those not so treated 16.6 per cent. The city of Chicago has an even more striking record. The annual mortality from 1886 to 1895 was 1417, while in the three years from 1895 to 1898 it fell to 851. Of 4071 cases treated with antitoxin,

the mortality was less than seven per cent, as compared with the previous mortality of over 70 per cent.

That so striking a therapeutic innovation as the use of serums in the treatment of disease should have been received with incredulity by the profession, and not a little active opposition, was to have been expected. In the controversy of the last score of years over the rôle of bacteria in the production of certain diseases, certain opponents have stood out strongly, and of necessity these were arrayed against any therapeutics having for their basis the introduction of an antitoxic serum into the blood. To admit this was to place the germ theory upon a secure foundation. Happily, the relation of bacteria to disease is now so well established that almost no scientific physicians deny the relationship. The few opponents of antidiphtheritic treatment are gradually being gathered into the ranks of believers. If there are any such remaining, we would recommend to them the statistics and discussion which we have just quoted in part, and also call their attention to what the figures show regarding the relation of mortality to the so-called modern treatment of typhoid fever. When we have a serum of the same relative efficiency as the antidiphtheritic serum which we can employ in typhoid cases, then the mortality of this disease will be materially reduced, and probably not till then.

FOOD PRESERVATION, ADULTERATION, AND DYEING.

It scarcely needed the last congressional investigation to show that the quantity of food adulteration has grown to enormous proportions in this country. Preservatives for foods are almost as ancient as the human race. Down to comparatively modern times salt, sugar, smoking, and drying were the principal substances and means employed for the preservation of foods. The advent of canning, depending as it does upon the exclusion of the microorganisms of decay, furnished a marked advance upon more primitive methods, as by this means foods can be preserved an indefinite time without a loss of palatableness or nutritive value. If things had stopped at this particular point no complaint could be made of food preservation, but unfortunately, in the effort to attain cheapness in these products, chemical disinfectants have been more or less employed. There is a wide difference of opinion as to the extent to which these may be used without causing disturbances of digestion or other deleterious effects. Some writers claim that the amount of boric acid used in the preservation of food is never sufficient to have a

bad effect upon the system, but others claim that such is not the case. A recent writer in *The Lancet* has studied the milk supply in London in reference to the use of preservatives. He attributes much of the mortality among infants, especially during the summer months, to the practice which prevails in systematically treating milk with antiseptics. Boric acid is the least deleterious of these, while formalin is probably the most harmful.

These evils have grown to such proportions that it is important for the various States to take action in the premises. The United States government should pass an act which shall reach these evils so far as they relate to interstate commerce. If antiseptics are used to preserve foods, they should be so labeled; likewise, if coloring matter or other ingredients are added to foods, these should also be stated. It is said that the ordinary white cherry of commerce cannot be sold when preserved unless it is colored a brilliant red. Some people have a fonduess for extra-green pickles, others for bright golden-yellow butter, cheese, etc. There is no reason why this taste should be infringed upon, but for those who do not care for coloring matters in their foods it would be well to have the colored foods labeled so that they can be avoided. Adulterants which are harmful should be prohibited, and those which are not should be correctly labeled. A mixture of pepper and ground crackers should no longer masquerade as "pure pepper," nor should "wheat flour" as a label be made to cover one-third white corn-meal and two-thirds flour. These are simply means of obtaining money under false pretenses, and as such should be prevented. From a public health standpoint there is no harm in selling ground crackers and pepper together, but it is a fraud on the consumer not to have it stated upon the label. Justice would be promoted, fraud prevented, and the public health immensely served by having all our food products correctly labeled. This should apply also to proprietary medicines.

THE BACILLUS OF YELLOW FEVER.

The bacillus icteroides is again the subject of discussion in the *Medical News* of December 9, 1899. The leading article in that journal is from Sanarelli, who again affirms that the bacillus found by him is the cause of yellow fever. He claims that his investigations have shown that this bacillus can be isolated from practically every case of the disease. He also states that no one has ever succeeded up to this in finding it in any other disease, nor in the cadaver of any person but one dead from the yellow fever. He has this

complaint to make: "No work of serious importance, so conscientiously performed as this one, has ever been the subject of criticism so superficial, and withal so obstinate, as my research of yellow fever has called forth."

The same journal contains a reply to Dr. Sanarelli's article, from Dr. George M. Sternberg. It is couched in dignified language, and reaffirms some of the statements made by Drs. Reed and Carroll. He states that he expects to receive a full report of the further research made by these gentlemen, and by Dr. Agramonte, who was in the city of Havana during the past summer. At some future time, when the experimental evidence is all in, he hopes to give a critical review of the cause of yellow fever.

Sanarelli states that this will be his final communication upon the subject, a resolution with which the profession will generally concur. The problems surrounding the discovery of the cause of a disease, particularly that of a living organism, are so difficult and obscure that several years must elapse after one is announced before it can be said to be definitely established. If Sanarelli's work is as perfect as he claims it is, he can safely leave it to the arbitrament of time, being sure that if his conclusions are correct they will be sustained. Nothing is more instructive in scientific controversy than the discovery of the tubercle bacillus by Koch. Opposing as it did so many pathological theories, it was met everywhere with incredulity and not a little opposition, much of which was illogical. It is to be put down to the credit of this eminent observer that he was never involved in a controversy over this great discovery. Feeling quite sure that his work had been of a sort that would stand criticism, he frankly left it to the profession to decide.

LIABILITY OF ANOTHER TO PAY THE BILL OF A PHYSICIAN.

A source of constant loss to the physician is his willingness to attend a patient upon the verbal statement of another that he will be responsible for the bill. Commonly the physician does not require that the language shall be direct and explicit, but is willing to accept even the implication of responsibility for the bill on the part of the person who sends him to the patient. Such directions may reach him over the telephone, and if coming from responsible parties are quite readily responded to. Thus, an employee of a manufacturer may send for a physician, stating that his employers will be responsible for the payment of the bill. After an attendance of days, weeks, or perhaps even months, the bill is presented to the

corporation, and the physician is informed that the services were never properly contracted for and that the corporation is not responsible. We believe that this is not an uncommon experience on the part of physicians, and it could be easily avoided by a little care upon their part. The law is quite well settled that responsibility for the obligations of another only apply where the contract is in writing. The mere verbal agreement to pay, or a coutract of even less definiteness, has no standing in court. When a physician is summoned by telephone, as is often the case, to attend an injured person, it is of course impossible for him to ask for a written obligation, but there is no reason why his attendance should extend beyond the first aid without such understanding. There is no reason why he should care for a person for days and weeks unless the question of responsibility for compensation is definitely settled.

A case was recently reported in the *Journal of the American Medical Association* of December 30, 1899, in which an action was brought to recover payment of a bill for medical services. The services were rendered to the son, aud the action was a joint one against the father and the son for the payment of the bill. The son was not a minor. The services consisted of house visits, office consultations, surgical operations and dressings extending over a period of six months. The physician alleged that at divers times during the treatment the son made statements to him which led him to believe, and from which he did believe, that the father would pay for the treatment, and that he relied upon such statements and gave credit to the father as well as to the son. The court gave judgment against the son and against the physician in favor of the father, on the ground that the promise to pay was not in writing. So much of the judgment as was in favor of the father was appealed to the Supreme Court of Californiа, which confirmed the judgment of the lower court. The above decision reaffirms the law in these cases. The Supreme Court of California, in discussing this case, does not go so far as to say that every liability of this kind must be in writing, yet unless it is so expressed there is very little hope of recovery.

AIR OR "CONTACT" INFECTION.

A recent writer has been studying air infection. His experimental work shows that infection from the air, due to minute particles of dust or moisture conveying bacteria, is possible. There

was really no need of such an experimental investigation. Every bacteriologist well understands that unless care is exercised, plate cultures, bouillon, and other material may be infected by the air.

In the controversy over spontaneous generation twenty years ago, Tyndall conclusively showed that air confined in a box which was allowed to stand for some time, in which the dust particles had settled to the bottom, adhering to glycerin which was smeared over the bottom, was absolutely sterile. Bouillon or other organic solution could be exposed for weeks to such an atmosphere without the slightest decomposition. Naturally these early experiments dealt largely with the floating organisms of the air, and they impressed observers with the importance of air as a source of infection of wounds. After a time surgeons got away from this view and came to the conclusion that so far as wound infection was concerned, it rarely occurred from the atmosphere, though the possibility of such infection has never been denied. Practically all surgical infection is contact infection, either from the skin, the instruments, dressings, or any foreign body that may be brought in contact with the tissues.

The late experiments of Flugge, to which we refer, again call attention to the possibility of air infection, and he says that it is wrong to attribute so much infection, as we commonly do, to a defect in sterilizing the skin. Hence his recommendation that the beard, hair, mouth, and nose of operators and assistants should be carefully protected, as in the act of coughing or talking particles of moisture carrying bacteria may be easily deposited upon the wound. There can be no objection to protection of this kind, but in the judgment of the most advanced surgeons of to-day such infection is regarded as extremely rare. Biology teaches us that the cells of a part can dispose of a certain number of microorganisms, but how many we do not know; certainly in the great majority of cases the few which accidentally fall upon the wound from the atmosphere are easily taken care of in this way. Undoubtedly there is a great difference in the virulence of microorganisms; with some a less number will infect, but there are probably few which are so malignant that in very small numbers they may not be cared for by the tissues. In contact infection, however, there are invariably conveyed to the part an enormous number of organisms. A single sebaceous follicle of the skin may harbor millions of these organisms. Notwithstanding the experimental work of late years, the dictum of Billroth still remains that practically all dangerous infection is contact infection; using the term "contact" as distinguishing between infection through air and the actual application of a foreign body.

THE BIRTH- AND DEATH-RATE.

Under the title "Population and Prosperity," an editorial writer in the *Journal of the American Medical Association* gives some interesting statistics of New Zealand. This British colony has applied many socialistic theories in its government, and it is accounted a very fortunate community. At least, it apparently has a lower death-rate than any population of equal size. In 1895 the deaths were 9.9 per thousand, and in 1896 they were 9.1. The figures for England, France, and Germany are more than twice this amount. There is an exceptionally low birth-rate, amounting to only 26.33 per thousand.

The *Journal* says a lowered birth-rate is a sort of natural sequence of a lowered death-rate, and the natural increase, with a birth-rate of twenty-six to a death-rate of nine or ten, would rapidly double the population, which would soon make these islands uncomfortably overcrowded.

The subject is exceedingly interesting and is suggestively discussed in the editorial. There need, however, be no anxiety as to a disproportion between the birth-rate and death-rate of any country. They must eventually equal each other, as it is apparent that the population cannot go on adding to itself for an indefinite time. Conditions may be such that will permit an extension for a great many years, but it is apparent to the casual observer that there must ultimately come a time in which the death-rate will equal the birth-rate. It may be possible that in the distant future the death-rate of New Zealand will remain at 9 or 10 in the thousand, but if so the birth-rate must also decrease. It is more than likely that the exceptionally low death-rate is due to an accentuation of the causes which are more or less prevalent throughout the world. Improved sanitary surroundings and a more abundant food supply, and above all the control of epidemic diseases, have tended in the last forty years to an enormous reduction of mortality from preventable causes. As time passes, however, the effect of this reduction will be overcome by the development of the diseases incident to old age and those dependent upon degeneration. Already the death-rate from cancer is said to have increased fourfold in England. This is due to the fact that there are a much larger number of people who have reached the cancer age. It is apparent that if a man does not live forever he must die of something, and if he is preserved from the ordinary infectious maladies the degenerative changes of advanced life must carry him off. An increase in the average age of the inhabitants of the country means the increase of diseases

incident to the advanced period of life. The mortality from old age must make up the saving of life in the young, so that ultimately the death-rate and birth-rate are equalized.

THE PROPER PERFORMANCE OF VACCINATION.

For many years the operation of vaccination has been considered one of the trivial things in medicine, which could be as well performed by undergraduates, or even by laymen, as by physicians. Not a few of the laity are in the habit of vaccinating themselves or their families. When points were used they were easily contaminated; probably not while in the hands of the producers, but as commonly put upon the market, wrapped in the rubber protective, they would easily become contaminated as soon as the wrappings were removed. As a rule they were retailed in drug stores in which little care was exercised in their preservation. Even if they did not become contaminated, there was a liability of their simple deterioration. The best accepted methods of the present time require vaccination to be done with a glycerinated lymph protected in sealed tubes. Not only is a better and more reliable product thus secured, but if properly prepared there is no danger of contamination and sepsis.

The laity should be taught that the operation of vaccination, while not a grave and serious one, should be under careful professional supervision. The physician himself should not perform it in a careless or hurried manner. The site selected for the operation should be carefully cleansed, using green soap, or failing this ordinary Castile soap, with a stiff brush. The part is then cleansed with clean water, and the virus is best introduced through a number of superficial parallel incisions made with a sharp lancet. The site of the inoculation is then to be protected by one of the vaccination protectors commonly sold; or an excellent substitute is found in one of the large bunion plasters. This is to be fastened to the skin so that the hole in the plaster includes the site of the inoculation. It admits of ready inspection, and all such cases should be seen at least twice after the operation. Not only is this necessary to ascertain if the vaccination has been successful, but to early meet any complications which might develop.

Much of the distress shown by the general public, and of the belief that diseases are conveyed in this manner, is due to secondary infections from careless vaccinations, or improper care of the vesicle after it is formed. The use of glycerinated virus with the care indicated will do away with those occasional secondary infections that have furnished ammunition for the antivaccinationist.

ABSTRACTS.

MEDICINE.

Some Features of the Nauheim Bath Treatment.—

W. J. Barlow, in the *Southern California Practitioner* for October, 1899, describes the baths given at Nauheim. They are begun at a temperature of 34° C. The water comes from a tank, and from it most of the carbonic acid gas has been allowed to escape. This gives a deposit of peroxide of hydrogen and calcium carbonate, and the water is of a yellowish-brown color. These baths are gradually strengthened, and the temperature is gradually lowered as treatment continues, being guided by indications of the individual case. An hour or more after a light breakfast the bath is given with the patient in a sitting posture, the arms extended, and the head resting against the edge of the tub. The water covers the shoulders. This position is maintained from four to ten minutes, when he is removed, covered with a light warm towel, and gently rubbed dry. The duration of the bath depends much upon the reaction. It is gradually increased to fifteen or, rarely, twenty minutes. The shortest time may be followed by prostration, and frequently patients feel pressure over the chest and abdomen and experience some dyspnea. After the bath the patients walk, or if not strong enough are wheeled, to their rooms, where rest for an hour is enjoined and a glass of hot milk is given. There is no friction or resistance used during the bath. The massage and exercises form part of the course of treatment given at other hours than the bathing time. To the weaker cases such baths are given once every second day, but in no case is a patient allowed more than four or five daily successive baths without an interval of twenty-four hours.

After ten to twenty baths, or according to the patient's condition, the stronger or more invigorating bath, known as the sprudel or "champagne bath," is given. In this the water is brought directly from the spring without contact with the air. It is clear as crystal, and contains a large amount of carbonic acid gas, which bubbles like champagne. These baths are taken at the natural temperature. Immediately after immersion the whole body is covered with globules of the natural gas, which produces a natural glow. One patient described this sensation as similar to a covering of warm soft fur. In this bath a temperature as low as 28° or 27°

C. may be used, and the patient still feels warm. These baths increase the force of the heart's action with a decrease of frequency.

A Typhoid Infection Without Lesions of the Intestines.—

A. McPhedran, in the *Canadian Journal of Medicine and Surgery* for October, 1899, adds another to the growing list of cases in which the bacillus of typhoid fever has been found without disease of the intestinal glands. The patient was 24 years of age and was admitted to the hospital after having been sick about a week. The previous history was negative. Temperature on admission was 104.6°, the pulse was 96, and respirations 24. There was weakness and nausea and pains in the back. Diarrhea was absent. The countenance was heavy and dull, the tongue coated, and the breath was offensive. The liver was enlarged. The urine gave a marked diazo-reaction; it contained a small quantity of albumin and a little bile pigment. The blood contained 4,120,000 red blood-corpuscles, with 10,000 white corpuscles. Hemoglobin was 85 per cent and the Widal test was positive. On October 23 the abdomen was somewhat distended, the flanks were full and dull on percussion, and there was a deep-red papillary rash on the chest and back, the papules showing pustulation. Fourteen days after admission she became alarmingly weak after the administration of a bath. Ten minims of an aqueous solution of suprarenal gland was administered hypodermically, which was followed by a marked improvement in the pulse and temperature. There was some edema of the lungs, but no tubercle bacilli were found in the sputum. Death took place about forty days after admission. All the abdominal organs were congested and inflamed, the intestines presenting many small hemorrhages on the mucous surface. There was no loss of substance nor enlargement of Peyer's patches. The mesenteric and retroperitoneal glands were enlarged, and some were very soft. From the spleen an organism having all the characteristics of the typhoid bacillus was isolated, and it gave the characteristic culture reactions. An agglutination of these bacilli was obtained when treated with blood procured from the patient before death, and also when treated with the blood from a case of undoubted typhoid fever. A streptococcus, not pathogenic for rabbits, was obtained from the spleen. From the peritoneal exudates and from the liver substance the bacillus coli communis was obtained.

The author has gathered nineteen other cases of typhoid fever without lesions of the intestinal glands.

A Method of Feeding Insane Patients Who Refuse Food.—

Those who have had experience in asylum work know the difficulties in feeding patients who obstinately refuse food. The nasal tube must of necessity be flexible and rather small, and it is not an unknown accident for the tube to enter the larynx and the patient's lungs receive part of the fluid. This danger is obviated, of course, by the use of the stomach-tube by the mouth. In a patient who resists, however, the difficulty is considerable. It is necessary to employ a mouth-gag, and sometimes a tooth or even the jaw has been fractured in the effort to open the mouth.

It is with interest that we note a communication by A. H. Newth in the *Journal of Mental Science* for October, 1899, in which he describes a method of artificial feeding not generally known. It has been in use in the Heywards-Heath Asylum for many years and has been perfectly successful; it is rapidly performed, and fewer attendants are required. The patient is placed in a recumbent position. The person who administers the food steadies the head with his left arm or by holding the nose. A sheet is wrapped around the patient's legs, and a nurse kneeling on either side of the patient's legs holds down the hands by the wrists, avoiding pressure on any part of the patient's body. Then the forefinger of the left hand is introduced into the cheek, which is stretched to the fullest extent. This prevents the orbicularis oris and the buccinator from acting, and the patient is quite unable to spit the food out of the mouth. An ounce of liquid nourishment is easily poured into the pouch thus formed by the distended cheek, and trickles gradually down the throat. It is not necessary to open the teeth, as there is plenty of room behind the last molar or between the teeth for the liquid to reach the pharynx. If the patient refuses to swallow, nasal breathing is obstructed by a gentle pinch of the nose. After fighting in this way for a time, the patient finds that he is perfectly helpless in the matter, and soon gets tired of resisting and takes food voluntarily.

Gas-producing Bacteria Causing Pneumothorax.—

F. G. Finley, in the *Montreal Medical Journal* for October, 1899, reports a case presenting fulness over the right thorax. The percussion note anteriorly was normal; below that it was hyperresonant. Posteriorly there was dulness at the base for two fingerbreadths. An aspirating needle was introduced in the eighth intercostal space, and twenty ounces of almost pure blood drawn off. The physical signs after this remained about the same. The prostration increased,

the temperature continued moderately elevated—from 101° to 102°—the pulse became remarkably weak, and death took place from exhaustion February 4. Examination of sputum revealed no tubercle bacilli. The autopsy showed the right pleura adherent and nearly a quarter of an inch thick. There was a sac in the chest wall an inch thick containing decomposed pus. This cavity was found to communicate with a space between the right lobe of the liver and the diaphragm, which contained pus similar to that in the pleura. There was no communication between either cavity and a bronchus. The abdomen was normal with the exception of acute splenic tumor. Bacteriological examination of the contents of the pleural sac and of the abscess showed the bacillus coli with proteus. The gas in the pleural cavity was conclusively shown not to be due to communication with any of the hollow viscera. The writer reports four cases from the literature, in which the proof that gas was evolved by bacteria is conclusive. In two of these cases the bacillus aerogenes capsulatus and that of the bacillus coli may have been concerned. It is impossible to give satisfactory diagnostic points. In three of the four cases there was abdominal disease, and the remaining one seems to have been due to wound infection. The writer concludes that pneumothorax may, in exceptional cases, produce gas bacteria. The presence of hydrogen or other gases not found in the atmosphere is conclusive proof that this condition has not been caused by bacteria.

Sudden Death from Pulmonary Embolism.—

G. B. Biggs, in the *New York Medical Journal* of November 25, 1899, reports five cases of sudden death from pulmonary embolism which occurred under the following conditions: One was an intracapsular fracture of the femur accompanied by thrombosis of the iliac veins; a second, dislocation of the hip; a third, operation for inguinal hernia; a fourth, appendicitis with perforation; and a fifth, a suprapubic cystotomy for calculus. In not one of the cases associated with thrombosis of the pelvic veins was there a single symptom pointing to this condition. The symptoms preceding the development of pulmonary embolism were such as to warrant a favorable prognosis in each case. The most constant symptoms noted were dyspnea and precordial pain. In one case the first symptom was a violent chill, which was followed by cold perspiration, cyanosis, and irregular heart action.

In searching for emboli of the pulmonary artery, the author states that he has adopted a routine plan of examining the blood

which falls into the precordial sac after removal of the heart. The reason for this is found in the ease with which large emboli fall out of the pulmonary artery when it has been cut across. [A much better method in all cases of sudden death, where pulmonary embolism is suspected, is to raise the heart after the pericardium has been opened and make an incision into the pulmonary artery. A forceps can then be introduced in the search for thrombi, or the lumen of the vessel may be explored by the finger.]

The emboli are usually in the shape of cylinders, which often become folded upon themselves as they are forced into the branches of the artery. Thrombi which have formed in veins are chiefly of the red variety, often quite firm, and slightly stratified. They may differ but little from post-mortem coagula.

Acute Diabetes.—

A. F. MacKenzie, in the *Canadian Practitioner and Review* for November, 1899, describes a case of a young man 20 years of age who consulted him January 9, 1899. The patient stated that about two weeks before he had partaken freely of sweet food and drank a good deal of cider. He noticed an increase in the amount of urine and was very thirsty. Two weeks after these symptoms appeared the urine was found to have a specific gravity of 1032 and gave a reaction for sugar. The urine measured 156 ounces in the twenty-four hours, and on January 13 it had fallen to twenty-three ounces, the specific gravity remaining the same. The pulse was 64 to the minute, and temperature 96½°. Two days later the urine was reduced to twelve ounces and the specific gravity to 1030; pulse 60, temperature 95⅘°. Twelve days after coming under observation the temperature rose to 98° and the pulse to 68, with increase in the amount of urine of 108 ounces, with a specific gravity of 1034. A quantitative analysis of the amount of sugar in the urine showed that it was about ten ounces in the twenty-four hours. The next day there was soreness in the limbs, headache, a temperature of 101.8°, and a pulse of 120. As the other members of the family were suffering with influenza, this was attributed to that affection. There was cough, but it was not troublesome, and at no time were there physical signs of consolidation in the lungs. About twenty-four hours before death the patient complained of pain in the lumbar region, although partially unconscious. Profound coma set in and the patient died on the 26th day of January, five days from the onset of the influenza and about one month from the onset of the diabetic symptoms. No post-mortem examination was made.

The Prognosis of Typhoid Fever.—

Reginald H. Fitz, in the *Boston Medical and Surgical Journal* of November 23, 1899, gives a study of the treatment of typhoid fever with its results, based upon the cases in the Massachusetts General Hospital for the past seventy-eight years. The beginning of these studies relates to the time when typhoid fever was not differeutiated from various other abdominal conditions, including typhus. In 1839 Enoch Hale instituted a method of treatment and diet which resembles closely that employed to-day, and which has not been materially changed during the past sixty years. Tables are given by decades since 1871 which deal with the number of cases treated, the mortality, and the complications of hemorrhage, perforation, and relapse. The whole number of cases was 3538; of these 509 died, giving a mortality of 14.3. A study of these tables shows a striking variation in the mortality-rate in different years. In 1890 the mortality-rate was only 8.8, but the following year it had risen to 16.3. The same thing is noticeable in the preceding decade, in which the mortality was 7.7 in 1880, while in the following year it rose to 22.7.

As a result of the study the writer comes to the conclusion that the average mortality from this disease has not materially changed from the days of active treatment with emetics, purgatives, venesection, antimony, aud calomel, down to the present time. Intestinal hemorrhage, perforation, and relapse, upon the whole, are quite as frequent now as at any period in the history of the disease. A considerable variety in diet may be permitted, not only without detriment, but with possible benefit to the patient.

Beriberi in the Philippines.—

L. F. Barker, in the *Maryland Medical Journal* of November 25, 1899, refers to an interesting outbreak of this disease which he had an opportunity to study while visiting the Philippines. It occurred among Philippine prisoners confined in the old Spanish prison at Cavite. No less than two hundred of the one thousand prisoners developed the disease. The disorder is divided into three types—the edematous form, the paralytic form, and a mixed form. In nearly all cases circulatory disturbances are shown early in the disease. There is palpitation of the heart and throbbing of the peripheral vessels. The heart is enlarged, especially the right side, due to dilatation, and there is marked cardiac distress. Digestive disturbances are common at the beginning. In the edematous form the legs begin to swell and the edema gradually extends upward,

until in some cases the whole body is involved. In the severe cases fluid forms in the peritoneum, thorax, and pericardium. In the paralytic form without edema, disturbances of locomotion come on gradually; the symptoms resemble those of peripheral neuritis. Many observers believe that no neuritis exists—only a degenerative process. Pain is usually present in some part of the body. The muscles of the calf are usually tender. Sensation may or may not be involved. Reflexes also vary with the distribution of the lesions. After a time muscular atrophy sets in. In the so-called mixed form edema and paralysis are united. The clinical history of the disease strongly favors the view that it is infectious. Cultures from the blood made upon blood agar yielded negative results.

Diagnosis of Typhoid Fever.—

William Osler, in the *New York Medical Journal* of November 4, 1899, says that during the past fifteen years he has been forcibly impressed with the strange readiness with which physicians diagnosticate a continued fever as malaria. In this period he does not remember to have seen in consultation a single instance of continued fever, diagnosticated as malaria, which did not prove to be typhoid. This lack of knowledge of typhoid and malarial fevers was conspicuous in the home camps during the late war.

The diagnostic value of quinine is manifest in fevers of malarial origin. North of Mason and Dixon's line, a fever which resists quinine is not of malarial origin. In these localities a continued fever is not due to malarial infection. This likewise holds good for the northern part of the United States, in which the graver forms of malarial infection are not known. The combined infection of typhoid and malaria is exceedingly rare; only a single instance has been met with in the Johns Hopkins Hospital in ten years, among nearly 1000 cases of typhoid. When it does occur, quinine readily stills the malarial side of the infection, while the typhoid fever pursues its usual course. Osler especially urges that the practitioners in the smaller towns, who cannot rely upon the microscopical findings, regard every case of continued fever of more than five or six days' duration as typhoid.

The Ferric Chloride Reaction in Diabetes.—

Clifford Mitchell, in the *Hahnemannian Monthly* for November, 1899, claims that this reaction is of value from a diagnostic standpoint. It has long been known that the urine of diabetic coma gives a Bordeaux red color with a solution of ferric chloride. The

substance which gives this reaction has been called diacetic acid. A short method of testing for it is to take two test-tubes, into one of which is poured four or five cubic centimeters of diabetic urine. A 20-per-cent solution of ferric chloride, Fe_2Cl_6, is prepared and added to each of the urines drop by drop. As the drops sink to the bottom of the urine they leave a cloud, due to the precipitation of the phosphates. After the third or fourth drop has been added, the upper and greater part of the urine becomes cloudy, but the bottom part is clear, and in normal urine is of a golden-yellow color; but in urine containing diacetic acid the color is a dark red. Many drugs give this reaction, especially those belonging to the coal-tar derivatives and salicylates. In the writer's experience but little amelioration is to be hoped for in cases where this reaction occurs. In his experience, based on the study of this reaction in 200 cases of diabetes, no marked improvement was obtained where diacetic acid persistently appeared in the urine. He gives a table of twenty-seven cases, in eight of which the reaction was present, and of this number six have died. In one there is no record as to the termination, and in the last, which was observed as late as August, 1899, there was no change. Of the remaining nineteen cases, all are living and some have improved very much. These observations extend over the past eight years.

The Diagnostic Importance of Pupilary Changes.—

Liebrecht, in the *Deutsche Medicinische Wochenschrift* for November, 1899, Nos. 25 and 26, says that a loss of the light reaction of the pupil with retained reaction to convergence is the most constant symptom of tabes. This may exist with a pupil of normal size, but usually it is somewhat smaller than normal. The failure of the light reaction is commonly on both sides, but it is occasionally unilateral. Associated with this condition is often found a difference in size of the two pupils, which is to be referred to disturbances in the sympathetic or the peripheral sensory nerves. A failure in the light reaction occurs in from 30 to 70 per cent of all cases of tabes. Much more rare are cases of immobile pupil, and still less frequent are cases of paralysis of the sphincter muscle. This last is a frequent symptom in syphilis of the brain. In general paralysis the failure of the light reaction is even more constant than in tabes, occurring in from 50 to 90 per cent of the cases. Myosis, which is common in tabes, is rare in general paralysis, but there is more frequently inequality or irregularity of the pupils. The rule which Charcot laid down, that reflex disturbances of the pupils are only

noted in tabes and paralysis, can no longer be maintained, except as a general rule, subject to exceptions. With cerebral tumors and abscesses there is commonly no disturbance in the pupil, so long as the optic and oculomotor nerves are not involved. In meningitis of the base the pupils are contracted, unless the trunks of the nerves are involved.

An Epidemic of Intercostal Neuralgia.—

F. Rilly, in the *Medical Record* of November 25, 1899, says that he observed a series of cases in June of this year which differed somewhat from the old type of intercostal neuralgia and zoster. At that time cases commenced to appear with the following history: After a few hours of malaise and chilliness, a sensation of uneasiness, and later of pain, manifested itself in the side, usually over the hypochondriac region. The pulse was 100 and the temperature 101°. Movements intensified the pain, and deep inspiration or coughing was almost impossible. After two or three hours sweating commenced and the pain began to diminish, and two or three hours later the pain had disappeared. There was some gastric disturbance and general uneasiness following the attack. On the second or third day a herpetic eruption appeared. Four paroxysms were the largest number observed in any case. Fourteen such cases were observed within a period of five weeks. Several other physicians located in the upper west side of New York reported a series of similar cases. That the disease was not a simple neuralgia was shown by the fact that leucocytosis was found in every case. The presence of continued fever, gastrointestinal disturbances, night sweats, and prostration shows that there was a general toxemia. Three of the writer's cases occurred in one house and two in another. Quinine had no effect, and a previous malarial history was rarely obtainable. In one of the cases the spleen was palpable.

Endocarditis Due to the Influenza Bacillus.—

M. F. Austin, in the *Johns Hopkins Hospital Bulletin* for October, 1899, says that endocarditis of infectious origin is associated with many species of bacteria, the most common being the pyogenic cocci. Since the discovery of the influenza bacillus by Pfeifer, a number of cases of endocarditis following or accompanying influenza have been described clinically, but thus far it has not been demonstrated in the anatomical lesions of endocarditis. There have come to autopsy in the pathological laboratory of the Johns Hopkins University and Hospital three cases of endocarditis in which bacilli

were found in the lesions of the heart valves. In appearance these agreed closely with the influenza bacillus, and were probably identical with this organism. All three of the cases described presented an infection of the endocardium, with minute bacilli possessing characteristics in common. Their staining reactions and difficult culture agree with the bacillus of influenza. Organisms were not obtained in pure cultures, so that one link in the chain of proof is not supplied, and it is possible that the bacillus was not identified. There can, however, be no doubt that the disease of the heart valves was due to the minute microorganisms described.

Hypodermic Method of Vaccination.—

F. H. Gardner, in the *Journal of Medicine and Science* for November, 1899, finds some objections to the usual method of applying vaccination virus. As ordinarily used the ulcer is large and is accompanied by constitutional disturbances; it also leaves an unsightly scar. The necessary scarification in children is often objected to and resisted. It occurred to him that this might be obviated by using the hypodermic syringe. Having failed four times in one case, he took an ordinary syringe and drew a few drops of sterilized water into the barrel. The end was then inserted into the end of a tube of glycerinated virus, which was drawn into the syringe. The contents was then injected just beneath the skin of the leg. At the usual time it began to swell, following the ordinary course of vaccination, but giving a smaller ulcer at the point of injection. The method, he says, saves time, no blood is drawn, the virus cannot be wiped off, there is less pain, the results are more certain, and the scar is smaller. He thinks his success with the method warrants its trial on a more extended scale.

Cause of Chronic Bright's Disease.—

A. G. Nicholls, in the *Canadian Journal of Medicine and Surgery* for December, 1899, says that the so-called different forms of Bright's disease are to be regarded as various stages of the same general process, there being a unity pervading the whole pathological picture. The forms of nephritis are, in the majority of cases, due to infective agents; the acute to the usual specific germs of the former disease, and the chronic, as a general rule, to the bacillus coli, though other germs may sometimes be concerned. Acute interstitial inflammation and subsequent hyperplasia are the termination of the process. This, however, is preceded by parenchymatous degeneration. The point of invasion of the bacillus coli is the

gastrointestinal tract; the liver and mesenteric glands are the first involved. The endothelial cells, the capillaries, and the secreting organs of the kidney have a power of resistance, which when overcome is followed by inflammation. Bacteria are constantly passing from the intestine into the liver, and thence into the general blood-stream, in a normal animal.

Infected Vaccine Wounds.—

F. G. Attwood, in the *New York Medical Journal* of December 2, 1899, reports having seen a number of cases of very sore arm after vaccination. He has reached the conclusion that most of the untoward results of vaccination are due to an improperly prepared or an improperly protected virus. He says: "Would any sane physician with the least knowledge or experience with infection processes be willing to make abrasions in the cuticle of an innocent person, and then proceed to rub upon the denuded surface any other animal substance, such as blood-serum, which had previously been exposed to the atmosphere for weeks?" This is exactly what is done when ivory points are used. They are excellent culture media and are easily contaminated. These objections to vaccination are overcome by the use of sterilized glycerinated lymph. A letter from Dr. W. H. Welch accompanies the article, in which he states that glycerin destroys most contaminating bacteria and does not interfere with the effectiveness of vaccine virus if properly applied.

The Relative Virulence for the Domestic Animals of Human and Bovine Tubercle.—

In the *Journal of Applied Microscopy* for October, 1899, is a summary of the Arkansas Agricultural Experiment Station Bulletin No. 57, which says that a comparison of virulence for cattle of human and bovine material shows that the bovine material is more virulent. For pigs there seems to be no difference in virulence, both being capable of producing infection. Sheep are highly susceptible to bovine tubercle bacilli. The results in regard to human tubercular bacilli were not sufficiently worked out to arrive at a definite conclusion. Chickens were very insusceptible to both. It also seems that there can be no doubt that cattle are susceptible to infection from human tubercular material, and that the disease is similar to the naturally acquired tuberculosis of cattle, though the lesions are usually much less extensive. All comparative tests, with the exception of that of Chauveau, show a greater susceptibility of cattle for bovine than for human tubercular material.

The Transplantation of Thyroid Gland in Animals.—

In the *Centralblatt für die Grenzgebiete der Medizin und Chirurgie* for November, 1899, von Enderlen reports his experiments in transplanting the thyroid gland in dogs and cats. Two series of experiments were made; in one the entire thyroid gland was transplanted, and in the other only one-half the gland was transplanted at one time. When the entire gland was transplanted at one time the reaction upon the animal was very marked, but one-half was followed by very little constitutional disturbance. The glands were transplanted to the peritoneal cavity, or between the peritoneum and the abdominal wall. In most cases the gland formed new vascular connections. In the few instances in which necrosis of the transplanted thyroid developed, it was due to death of the connective tissue. In its new situation the transplanted gland produced colloid, but not in sufficient quantity, or at least it did not gain access to the circulation in sufficient amount to maintain the health of the animal, so that about six months after the operation the animal died.

The Spotted Fever of Idaho.—

E. E. Maxey, in the *Medical Sentinel* for October, 1899, describes a peculiar fever found in the more or less elevated regions of Idaho. The disease is of no great severity and almost invariably terminates in recovery, hence the pathogenic anatomy has not been studied. It is characterized by a fever of moderate intensity, which is followed or accompanied by an eruption of red spots which begin first upon the wrists and ankle, where they are usually most numerous, and then extend over the body. This peculiar eruption is what gives the disorder the name of spotted fever. In the course of the disease there is more or less muscular stiffness, and occasionally numbness of joints is noted, which persists for some weeks after the fever has subsided. The author attributes the disease to the high altitudes and the drinking of snow water. As soon as the patients are brought down to a lower level, kept warm and properly nursed, they rapidly recover.

Experimental Reproduction of Chancroid in Monkeys.—

Charles Nicolle, in *La Presse Médicale* of November 4, 1899, says that since the days of Hunter it has been believed that the chancroidal disease was confined to the human. Successful inoculations were reported by Turrenne and by Waltz in 1850, but these have been disputed. The writer regards the bacillus discovered in

1889 by Ducrey as the cause of the chancroidal disease. It was discovered accidentally by Unna in 1892. The bacillus is immobile, without spores, and does not stain by Gram's method. It is generally found in chains, and is properly classed as a streptobacillus. The experiments upon animals ordinarily used for bacteriological work are entirely without results, but upon monkeys a characteristic ulcer was produced which could be inoculated in other parts of the same animal and from one animal to another, producing each time the characteristic appearance of the chancroidal disease.

Ulcerated Endocarditis Treated by Antistreptococcic Serum.—

F. J. Smith, in the *Clinical Journal* of October 18, 1899, reports the case of a man aged 26, the subject of acute rheumatism. The diagnosis of ulcerative endocarditis as a complication was made on the day he was admitted to the hospital after having been sick four days. On the eighth day of the disease the temperature fell, but the same evening he had a chill, and this continued on alternate days. The day following the first chill there was an embolism of the right popliteal artery. This cleared up in a few days, since which time he had been in a lethargic condition with an almost imperceptible pulse. Nineteen days after admission antistreptococcic serum injections were commenced, which produced a marked improvement in the condition of the patient, the temperature falling to 100.2° and the pulse to 122. The patient apparently derived great benefit from the injections.

Prognostic Value of Albuminuria in Chronic Nephritis.—

C. A. Tuttle, in a paper read before the New York State Medical Society (*Medical Review*, Oct. 28, 1899), said that urinary examinations, as ordinarily made, were of little value in determining the condition of the kidneys. He claimed that chronic interstitial nephritis could exist without albuminuria, casts, or the usual clinical symptoms of kidney impairment. At the same time albuminuria of measurable quantity and renal casts might be present, and the health of the individual be unimpaired throughout many years. His proposition is that Bright's disease may exist without albumin and casts, and that albumin and casts may be found in normal urine. Given a case of chronic Bright's disease with albuminuria, its constancy or amount has no prognostic significance.

SURGERY.

Removal of a Ruptured Spleen.—

George Heaton, in *Pediatrics* of November 1, 1899, reports the case of a boy aged nine years who had been run over in the street and sustained severe abdominal injuries. The injury had been inflicted by the wheel of a heavy vehicle which had passed over the abdomen. When admitted to the hospital he was semiconscious and very pale; pulse 130, small; respiration 30, shallow. There were no external wounds, but some bruises over the lower ribs on the left side. He complained of much abdominal pain, and there was dulness in the left flank which rapidly increased in area, and soon the dulness on percussion involved the whole of the lower part of the abdomen. The diagnosis of severe abdominal hemorrhage, probably from rupture of the liver or spleen, was made.

Abdominal section was performed five hours after the accident. A median incision was made. On opening the peritoneum it was found to be dark-colored, and a large amount of blood escaped. The liver was found to be normal, but only a small part of the spleen was attached to its omentum. Nearly two-thirds of the organ had been completely torn away. The bleeding from the torn splenic vessels was violent, and was only stopped by applying large pressure forceps. By this time the patient was pulseless, and respiration was only an occasional shallow sigh. The removal of the ruptured organ caused the pulse to return. Saline fluid was infused into the median basilic vein and strychnine hypodermically injected. This was repeated at intervals during the night, and a morphine injection was given once. The boy was very restless and vomited frequently. The following morning the temperature was 96° and the pulse 160. A subcutaneous infusion of saline fluid was made in the side of the chest, and he was given enemata of milk, beef tea, and brandy. He vomited frequently. From this time on there was slow improvement. Temperature remained somewhat elevated—from 99° to 100° for nine days. Appetite was capricious and emaciation rapid. The temperature was highest on the fifteenth and sixteenth days after the injury, when it ranged from 100° to 102°. The blood at this time showed 60,000 leucocytes. In the next ten days there was gradual improvement, though the pulse remained rapid, varying from 110 to 120, and the respirations from 32 to 36. The restoration to health was gradual, and the anemia did not disappear until six months after the accident.

Blood counts were made in December, January, February, and May. In each of these examinations the red cells were always found above four million. Seven days after the accident the leucocytes were 60,000 in number, and the last count showed them to be 10,440. The percentage of hemoglobin increased from 40 to 75 per cent.

The removal of the spleen in this case was followed by a marked pathologic leucocytosis. There was a diminution in the number of leucocytes, notwithstanding that there was noted a slight hyperplasia of the lymphatic glands. There was a large increase in the mononucleated forms, which discredits the theory that the spleen is especially concerned in the production of such cells. There was an abnormal number of so-called transitional cells exhibiting changes in their nuclei and protoplasm.

Difficulties of Abdominal Surgery.—

M. H. Richardson closes a long article on acute abdominal symptoms demanding immediate surgical intervention in the *Boston Medical and Surgical Journal* of November 2, 1899, as follows:

"What is to be the teaching in the treatment of these emergencies? Shall we advise that when symptoms demand intervention any one shall operate, whatever his experience may have been? After prolonged consideration of this subject, and after years of almost daily observation, I feel that, on the whole, the cases are best treated medically if the operation is to be in the hands of the totally inexperienced. I say with reluctance, but without hesitation, that unless the operator can bring a certain amount of experience to his aid, experience either in operating himself or in seeing others operate, unless he has been well trained in aseptic surgery, he will have a smaller mortality if he treats acute abdominal lesions medically than if he treats them surgically. Each community should have its experienced surgeon, and to him should be referred the cases both as to diagnosis and treatment. Small communities and thinly settled districts do not provide opportunities for a very great experience even if concentrated upon a single man. Many physicians are so situated that from the nature of their surroundings they can never gain that familiarity with abdominal diseases and abdominal surgery which justifies them, except perhaps in the rarest instances, in opening the abdomen. Operations which beforehand we think will be extremely easy sometimes prove excessively difficult. The plainest case may unexpectedly demand, as the patient's only chance of recovery, resources of skill and

daring which only years of experience can give—an apparently simple appendectomy may require resection of the ileocæcal valve; a simple ovariotomy, the most difficult and dangerous dissection. Furthermore, these complications usually require the operator to proceed, whatever the dangers and difficulties may be, for to abandon the operation is to abandon the patient to certain death. Operations attended by hemorrhage which can be checked only by complete and rapid extirpation of a tumor; resection of intestines demanded by contiguous and infiltrating growths; repair of wounded intestines; immediate recognition and control of unexpected and perhaps deeply seated hemorrhage—these are a few examples of the common emergencies which the operator may meet. An experienced man can usually meet them successfully, but occasionally conditions unexpectedly occur which tax the ingenuity and resources of the most experienced—desperate conditions in which something must be done and there is no time to think; death is a question of seconds. Amid such thrilling complications every operator will sooner or later find himself; the broader his experience, the less the likelihood that they will be of his own making, and the greater the ease with which he will overcome them."

Perineural Fibroma Involving the Entire Sciatic Nerve.—

Rudolph Matas, in the *Medical News* of December 9, 1899, reports a case of fibroma involving the entire sciatic nerve sheath and deep popliteal fascia. The patient was a mulatto, a native of Louisiana, aged 22 years. There was a history of tuberculosis on the maternal side. The previous history of the patient was good. The tumor had been developing since he was 12 years of age. He had become very inactive, and his hygienic surroundings were poor, so that his weight had fallen to 120 pounds, notwithstanding that his height was six feet. The affected limb was enlarged from the hip to the toes, the enlargement being most marked posteriorly. The tumor had its beginning in the popliteal space as a painless swelling, which did not interfere with the function of the leg for the first seven years of its growth. About two years before coming under observation edema showed itself, and the leg became very weak. The length of the growth was 17.5 inches, and the circumference of the knee was 19.5 inches. The circumference of the opposite limb was only 14.5 inches. The skin over the tumor was thin and adherent. The underlying mass was hard and nodular. There were no trophic disturbances in the leg, and sensibility was intact in the foot. The tumor was removed by a dissection extend-

ing from the tuberosity of the ischium to the middle of the calf. The skin incision was twenty-four inches in length. The tumor had a capsule; when removed it had a length of seventeen inches and a weight of a little more than three pounds. The origin of the tumor from the sheath of the sciatic nerve was definitely ascertained. In the removal, both the popliteal vein and artery were cut away. It was thought after the operation that it would be necessary to amputate the leg, but later there was a recovery in the circulation, there being only a necrosis of the anterior portion of the foot and the heel. These were amputated, and the ultimate result was a useful stump.

The Early Diagnosis of Tubercular Joint Disease.—

L. W. Ely, in the *Medical Record* of December 16, 1899, says that the late recognition of tubercular disease of a joint is comparatively simple, but an early diagnosis is essential if the case is to be cured with a return of function. In no class of disease does the axiom that the eyes should be used first and most and the hands last in diagnosis apply so well as in these affections. A good history is needed also in arriving at certainty in diagnosis. Tubercular disease is usually characterized by gradual development, and the beginning cannot be, as a rule, definitely fixed. With slight ameliorations it gradually grows more severe; there is frequently a history of trauma. Pain and stiffness are two important symptoms. Pain is rarely located in a certain spot, but in indicating it the hand is usually passed over a certain region. It is worse on motion, and is apt to come in paroxysms at night, when the muscles holding the joints quiet are relaxed. Stripping the patient is of the utmost importance; this rule knows no exception in men and children, and in women it should be modified but slightly. Next, the attitude should be observed, then the deformity and change in contour.

The joints most liable to tubercular disease in the order of frequency are the spine, hip, knee, ankle, elbow, wrists, and shoulder. This study is based on 453 cases of tubercular joint disease observed at the Vanderbilt Clinic between January 1, 1895, and January 1, 1899. The history of these cases was negative in 309, in 76 heredity is not mentioned, but in 68 a positive tubercular family history was obtained. Sacroiliac disease, of which much has been written, is very rare; but one case appears on the record of the Vanderbilt Clinic for four years. The author considers the symptomatology of tuberculosis in the different joints.

Simulated Appendicitis.—

In the *Boston Medical and Surgical Journal* of December 14, 1899, J. G. Mumford describes the case of a young girl of 12 years, who was sent to the Massachusetts General Hospital with a diagnosis of appendicitis. The child was vigorous and well developed, and was sent in on the third day of her illness. It began with acute pain in the umbilical region, which lasted six hours, when the patient began to vomit. The matter vomited was not analyzed. The patient obtained relief from pain for a few hours. On the second day the pain gradually became more severe. It was situated at first in the right inguinal region, but later extended to the right chest and back. Prior to admission to the hospital it is said that there was a high fever; twelve hours before admission castor oil had been given, which was followed by a number of watery stools. When first seen the general condition seemed to be good; the temperature was 103°, pulse 112, and respiration 28. The abdomen was distended and tender. McBurney's point of tenderness was easily distinguished, and localized the severest pain. Rectal examination was negative. An incision was made over the point of greatest pain and revealed a distended but normal cæcum, with a long, normal, retrocæcal appendix vermiformis. Careful exploration of the abdomen revealed nothing. Within the cæcum, which was opened, a compact mass of orange pulp was found, which was removed, under the impression that it might be a growth. The blood-count made after the operation showed 30,200 whites, which within two days fell to 10,500. While no appendicitis was found, nor indeed any serious condition upon operation, the symptoms apparently pointed to a perforated appendix and a spreading peritonitis.

Remote Results of Operation for Removal of Adenoids.—

The *Medical Bulletin* for December, 1899, has an editorial summary of a paper by Brindel, published in the *Revue Hebdomadaire de Laryngologie d'Otologie et de Rhinologie*, dealing with the ultimate effects of operations for adenoids. Some of the immediate effects of this operation are a gain in weight and an improvement in the growth and development of the thorax. Brindel especially devotes himself to the study of the influence of operation upon the sound and diseased ear. Adenoid vegetations were found in 1624 patients; of these, 808 had concomitant auricular disease. In about one-half of the cases the ears were infected, and this was true in cases of growths that were sufficiently large to obstruct the nasopharyngeal passages. In exudative catarrhal inflammation of the middle ear, a

radical cure is often obtained by a simple removal of the growths. The fluid in the middle ear is absorbed and the redness of the drum disappears. About three-fourths of the cases in which adenoid growths are associated with ear trouble belong to this class. In the dry form of chronic catarrhal otitis media, associated with adenoid vegetations, some good may be accomplished, but the probable benefit of the removal of adenoids is not encouraging. Non-catarrhal otitis was associated with asthma in two per cent of the cases. This class is benefited by the operation as the progress of the disease is retarded, but not cured. In sclerosis of the middle ear no improvement follows removal of the adenoid growths. In young deaf-mutes there frequently is sufficient return of the hearing to enable them to be taught to speak by the ear. Recurrence after adenoid operations is rare, amounting to no more than 1.7 per cent in 1300 cases.

Sterilization of Surgical Instruments by Boiling in Distilled Water.—W. K. Rogers, in the *Journal of the American Medical Association* of December 16, 1899, says the trustworthy sterilization of instruments used by the ophthalmic surgeon is very difficult. The ideal method has yet to be found, but he has been better satisfied with the results of boiling in distilled water than with any other. By distilled water he does not mean the product of wholesale vaporization, but the condensed steam such as a chemist would use for careful analytical work. If such is obtained the most delicate metal instruments may be boiled for an hour without impairing their surface or sharpness. No amount of soda or other chemical introduced into lime-impregnated water will prevent a deposition upon instruments and an impairment of the cutting qualities. If instruments are to be sterilized by boiling, the nearer we approach perfect purity in the water the better the results. Chemical sterilization, in the author's hands, has proven very unsatisfactory; all aqueous solutions have a tendency to attack the edge of the knives. Formalin alone is free from this objection, but the process involves prolonged immersion, and if employed instruments must be wiped with some sterilized substance before they can be used. Lysol was found to be the least objectionable, but in full strength it cannot be relied upon to sterilize infected instruments in a reasonable time. The absolute reliability of boiling water is so well appreciated that nothing more efficient can be desired. If ordinary hydrant water is used the edge of the knife is dulled and the whole instrument damaged. The addition of soda to the water lessens the damage to the instrument, but only slightly preserves the edge.

Improved Method of Using Ether.—

A. E. Gallant, in the *Medical Record* of December 30, 1899, refers to his early experience in administering anesthetics. It was in his second year as a hospital interne, when without advice, without training, without even a fair knowledge of the action of the poisonous drug, yet anxious and willing to learn the art, with much trepidation he accepted the "towel cone," and at the command of the "house" poured on and crowded the ether. At the Roosevelt Hospital it was then the practice to use one thousand grammes or more per hour. The last annual report of this hospital announced the appointment of an experienced anesthetist.

In using ether the writer recommends a modified Allis inhaler. The rubber sheath is made extra long—eight and one-half inches—to increase the air space above and the nose space below. A piece of gauze, four to eight thicknesses, is placed over the end of the middle of the frame, which is placed in the rubber sheath so that it will lie just above the patient's nose. Into the cavity thus formed three-fourths of a yard of gauze is bunched. Through the open top ether in drachm doses is added without removing the cone. The free admixture of air guards against oversaturation, and the loose gauze can be readily replaced during a prolonged operation. The patient is encouraged to begin the anesthesia by holding the cone and inhaling voluntarily. As soon as some degree of muscular relaxation is reached the anesthetist takes the cone and places it over the patient's face. He claims that in this way surgical anesthesia may be maintained with one hundred grammes of ether per hour.

A Radical Cure of Hallux Valgus.—

R. S. Fowler, in the *New York Medical Journal* of December 16, 1899, describes an operation which was devised by George R. Fowler. The soft parts are transfixed with a slender-bladed knife between the great toe and its neighbor. The knife enters the sole of the foot half an inch proximad to the level of the metatarsophalangeal joint, and emerges on the extensor surface at the same level and just external to the extensor tendon of the great toe. With a sweep of the knife the soft parts are cleanly severed parallel to the long axis of the metatarsal bones, and in the web between the toes. The great toe is adducted, putting the contracted external lateral ligament upon the stretch. The joint is entered by severing this ligament completely. The great toe is dislocated inward so that it lies on the internal aspect of the first metatarsal bone. A

triangular-shaped piece of bone is then removed, which includes the hypertrophied portion of the head and also a portion of the articular surface.

Should the deformity tend to recur, as is sometimes the case on account of the contraction of the extensor tendon, it may be necessary to lengthen this tendon. This is preferably done at some distance from the site of the operation along the course of the tendon. It is drawn out and an incision made half-way through it on each side. This results in the tendon lengthening sufficiently to overcome recurrence of the deformity.

Diagnosis of Intestinal Perforation by Ether Inflation of the Intestines.—

E. M. Suttou, in the *Journal of the American Medical Association* of December 30, 1899, reports the case of a woman who was shot in the abdomen with a 30-caliber revolver. The ball entered the abdominal wall two inches below and one inch to the right of the umbilicus. The patient was removed to the hospital. There the bowels were inflated with the vapor of ether, which finally escaped from the mouth, thus convincing the operators that there was no intestinal perforation. The peritoneal cavity was opened, and the ball was found to have passed above the liver, injuring the diaphragm, and burying itself in the tissues behind. The blood-clots were removed and the abdomen closed. It is stated that the inflation of the intestines caused a sense of fulness, but no other discomfort. The patient made an uneventful recovery.

The method recommended by Sutton is only a modification of that brought out by Senn some years ago, and which has been definitely abandoned. Senn used hydrogen gas. The test was made by introducing it into the intestines and noting if it escaped into the peritoneal cavity and thus made its way through the abdominal opening. The method was found to be very unreliable, or to possess other disadvantages which have led to the definite abandonment of what seemed to be an admirable procedure. It remains to be seen whether ether used by Sutton has any advantages over the hydrogen gas.

The Difficulties of Administering Intravenous Infusions.—

H. E. Kane, in the *Cleveland Medical Gazette* for November, 1899, says all who have tried to administer an intravenous infusion are aware how difficult the procedure is under adverse circumstances. With suitable aseptic surroundings and moderately well filled vessels, it involves little difficulty. In the circumstances

which surround emergency cases with an uncleansed skin and veins collapsed from hemorrhage, the difficulties are considerable. In this class of cases hypodermic transfusion commends itself. The principal objection to it is the time required. To obviate this difficulty, he has devised a simple apparatus which consists of an ordinary container to hold the fluid to be transfused; passing from this is a tube which divides into four branches, each terminating in a needle. With such an apparatus it is easy to introduce from two to four quarts of fluid into the tissues in half an hour. The amount will depend upon the size of the needles and the thickness of the intercellular tissues. Four needles are quite sufficient, though more could be provided if necessary. In subcutaneous injections we cannot act upon the heart instantaneously, the same as though the veins and arteries were filled directly, but the simplicity of the operation and its safety outweigh the slight difference in time in most cases.

Would Surgery Suffer If Iodoform was Abolished?—

E. C. Brush, in the *Journal of the American Medical Association* of December 16, 1899, sets out to answer the above question. He says the use of iodoform is on the wane, and he desires to further restrict its use. Accordingly, a large number of letters were sent to various surgical clinics asking certain questions relative to the value of iodoform and the frequency of its use. The first of these was, "What germicidal powder do you prefer?" Of the eighty-four replying, twenty-seven used iodoform, twenty-four used no powder of any kind, twelve used boric acid, and eight used aristol. The remaining thirteen used acetanilid, nosophen, iodol, etc. To the question, "Have you seen any bad effects from using iodoform?" seventy-three reported that they had seen bad effects, and eleven had not. Four of the eleven had seen no bad effects because they had not used the drug. Thirty-seven thought that the drug could be abolished without any detriment to surgery, and forty-seven believed that the detriment would be in a general way; twelve limited the loss to the treatment of surgical tuberculosis, and eight considered the loss to be only when it is used in connection with the manufacture of surgical dressings and in specific cases.

Hydraulic Dilatation of the Bladder.—

H. H. Young, before the Clinical Society of Maryland (*Maryland Medical Journal*, Dec. 9, 1899), presented the case of a young man 30 years of age. Ten years before coming under observation

he had nervous attacks, in which there was retention of urine. In one of the severe attacks he was catheterized, which was followed by a cystitis. The patient was informed that he had gonorrhea and was placed upon injections. His condition became worse, and he was ultimately compelled to wear a rubber urinal. The urine was voided about every fifteen minutes, and the urethra was intolerant of any interference. The bladder, when forcibly distended, only held about twenty cubic centimeters. He had become addicted to morphine, and was taking a half-grain three times a day. Systematic hydraulic dilatation was undertaken, which at the end of the third week gave a vesical capacity of 100 cubic centimeters. He sometimes passed as high as sixty cubic centimeters of urine, and the frequency of micturition had decreased to two and one-half hours. The morphine and rubber urinal were discarded.

The Relation of Blastomycetes to Malignant Tumors.—

J. E. Owens, D. N. Eisendrath, and C. F. W. Ready, in the *Annals of Surgery* for November, 1899, quote the conclusions of Mafucci and Sirleo, who are much less enthusiastic than other pathologists of the Italian school relative to the part played by these organisms in the production of malignant growths. They believe that malignant tumors are probably of infectious origin, but the infectious agent has not been definitely determined. In studying the possible organisms concerned in the production of these growths, the search should not be confined to one species of germ; some of the blastomycetes have pathogenic properties. In their growth, however, they do not produce tumors which resemble carcinoma or sarcoma. They cause septicemia, suppuration, and chronic inflammatory processes, with cell proliferation. The blastomycetes so far observed in human carcinoma have in animals predisposed to cancer produced only ordinary inflammatory processes.

Major Operations with Ethyl Chloride for the Skin Combined with Chloroform Anesthesia.—

Oscar Bloch, in the *St. Paul Medical Journal* for January, 1900, discusses a method of lessening the duration of anesthesia and the amount of the drug required. In 1263 operations he used ethyl chloride to the skin alone in 503 cases. The local anesthetic was combined with moderate chloroform narcosis in 393 cases. Chloroform anesthesia alone was employed in 252 cases, and in 115 operations there was no anesthesia of any kind. He has carefully studied the sensibility of the various tissues and finds that prac-

tically all sensation of pain is confined to the skin, where incisions are made with a sharp knife. Most of the deeper structures are easily incised without pain by a sharp knife. If they are stretched or pulled open, pain is caused.

THERAPEUTICS.

Thyroid Medication in Insanity.—

W. Mabon and W. L. Babcock, in the *American Journal of Insanity* for October, 1899, have studied this treatment in 1032 cases. The material was collected from the hospitals for the insane in the United States, and obtained by means of a circular letter. The replies showed that this method of treatment has been carried on extensively in all varieties of insanity, from simple melancholia to general paresis, and that the best results were obtained in stuporous melancholia, in prolonged mania, particularly the recurrent type, and puerperal insanity. The total number treated in the thirty-six hospitals which replied was 508. Of this number 50 recovered, 94 improved, and 364 remained unimproved. The most constant results were obtained with the extract of thyroid, and it was found that the preparations of Parke, Davis & Co., Armour & Co., and Burroughs, Wellcome & Co. were the most reliable. The replies from the thirty-six hospitals using thyroid were generally favorable. A further trial of thyroid was made in the St. Lawrence State Hospital. In each case the patient was kept in bed, as this was found to accentuate the effects of the treatment. A full diet was given in all cases. The initial dose was usually five grains of the extract repeated three times daily before meals, and administered in a capsule. In resisting cases the powdered extract was mixed with the food. Fifteen grains daily generally produced acceleration of the heart's action, lassitude, and not infrequently a slight temperature reaction. At the end of about ten days the dose was generally increased about seven or ten grains three times daily, to be further increased to fifteen grains at the end of eighteen or twenty days. In most cases this was a maximum dose, although in a few cases twenty or twenty-five grain doses were given. About one-third of all the cases failed to react to the administration of fifteen grains daily, but all but four gave some reaction after commencing to take thirty grains daily. In four no temperature reaction was obtained by the maximum dose administered. One of

these cases gave no evidence of mental improvement. In the majority of cases little or no mental improvement occurred during the treatment. Those which improved or recovered first gave evidence of the change a few days after the thyroid had been discontinued. There was a gain of strength and weight in nearly all cases. The average maximum temperature reaction among the men who recovered was 99.6°, while among the women it was 100.2°. The average loss of weight during treatment among the recovered cases was 5.7 pounds, while the gain in weight after treatment was discontinued was 8.5 pounds. Sixty-one cases in all were treated, in which forty-four were men and seventeen women. The treatment was generally continued for at least thirty days; a longer administration was found useless, providing there was no evidence of mental or physical reaction. Five patients increased in weight during treatment, but the loss of weight in fifty cases was from two to twenty-six pounds. The recovery rate was 19.6 per cent, which accords closely with the general average of the collected cases. The reporters regard thyroid extract as a profound alterative which modifies cell nutrition.

The writers feel that the following conclusions are justified: (1) The dose of the extract depends entirely on the individual case. In some cases twenty-five grains three times a day will be necessary to bring about a circulatory or temperature reaction; while in others the same results may be had with the use of five grains three times daily. Each case must be a law unto itself. (2) It is essential that the patient should be placed in bed to obtain the best results, and he should remain there during the entire treatment and for a week following its discontinuance. (3) The treatment should be continued for at least thirty days. (4) We should not be discouraged by failure in the first administration, but should resort to two, three, or more trials, if necessary. (5) The most gratifying results in thyroid treatment are to be obtained in cases of acute mania and melancholia with prolonged attacks, puerperal and climacteric insanities, stuporous states and primary dementia, particularly where the mental alienation does not respond to the usual methods of treatment. (6) A high temperature reaction is not essential, as the average maximum temperature in the recovered cases among men was 99.6°. (7) Physical improvement is the outcome in most cases whether mental improvement takes place or not. (8) The proportion of individuals who recover under thyroid treatment and then relapse is less than the proportion that relapse after recovery from other methods of treatment.

Transfusion, Infusion, and Diffusion.—

E. F. Willoughby, in the *Therapist* of October 16, 1899, says that the origin of the transfusion of blood from the veins of one person to another is lost in antiquity. While Harvey experimented upon sheep and dogs, the first to put the operation to practical use were Denys and Emerez, and by them were performed an experiment which has been made many times since and always with disastrous results. An idiot into whose veins the blood of a calf had been transfused became delirious, developed hematuria, and died comatose. The Parliament of France at that period condemned the practice. Two cases of transfusion were performed at that time, and the practice was condemned by the pope. Köhler, in 1877, startled the scientific world by boldly announcing that transfusion of blood introduced a mass of dead material into the circulation of the animal receiving it, which caused the hematuria, fever, and other disturbances. He claimed that death in hemorrhage was not due to loss of red corpuscles and impairment of the oxygen carrying power of the blood, but solely to the loss of its watery constituents. In 1881–2 brilliant results were obtained by animal observers in the transfusion of a normal salt solution. These experiments showed that the depleted vessels were always ready to refill, and excepting the rapidity with which the solution was absorbed, it mattered little whether it was injected into the veins, into the rectum, or taken into the stomach. Subcutaneous injection of saline solution was proposed by Cantani in 1865, and while it acts slower than the intravenous injection, there is no necessity of skilled assistants nor complicated apparatus. They are within reach of the general practitioner under all circumstances, and it is generally possible to wait the ten minutes usually required for securing an appreciable improvement in vascular pressure by the subcutaneous method.

The apparatus required are a few fine, moderately long trocars and cannulas or hollow needles, two or three yards of india-rubber tubing, and a glass funnel or irrigating vessel. The simple physiological salt solution made with sixty grains to the pint has been found by experience to do all that can be wished. The water should be boiled and strained through clean calico or cotton-wool, and the vessels should be perfectly clean. Tablets are prepared containing from thirty to sixty grains, by which the solution can be freshly and conveniently prepared. The solution should be given at a temperature of 104° F. The vessels should be at a height of about six feet. In severe cases, twenty-eight or thirty-five ounces should be employed, but in those less urgent, in which collapse and shock

alone are treated, four to seven ounces is usually sufficient. In children 1½ to 3½ ounces, and in infants ¾ to 1¾ ounces, is usually sufficient. In cases of fatty or dilated heart, where there is embarrassment in the pulmonary circulation, the quantity should not exceed three or six ounces, which should be repeated at frequent intervals. The needle is inserted as in ordinary hypodermic injections, but a point must be chosen in which the skin is loosely attached to the underlying tissues, so that the subcutaneous tissues may be easily distended by the fluid.

Good and Bad Qualities of Formalin.—

Ely Vandermarker, in the *American Therapist* for November, 1899, says that when formalin was first introduced fabulous things were claimed for it as a germicide. He has put these statements to the test, and has found that it fell far short of the claims made for it. He still uses it as a disinfectant in the rooms of his hospital, but is not satisfied that it is better than the sulphur dioxide formerly used. It is a powerful irritant, is very poisonous, and is actively corrosive. Its gas is irrespirable in any degree of division, and its solution must be more attenuated than that of corrosive sublimate if it is to be applied with safety to living tissues. It is a powerful tissue destroyer, and taken internally it depresses the vital nerve centers. There is no known antidote to its direct effect.

The writer contributes an additional case of formalin poisoning. In this case a teaspoonful of commercial formalin was given, which was immediately followed by severe pain in the throat and burning in the stomach. There was prompt vomiting with great depression. In a few hours the dangerous symptoms had passed, but the condition of the mouth lasted for a week. In this case white of egg was given, but it is the writer's opinion that it has no effect in preventing the poisonous action of the drug. Vomiting should be promoted, and if a stomach-tube is at hand, the stomach should be immediately washed out. The patient's life was saved in this case from the fact that the stomach contained a large quantity of food, the vomited matter amounting to nearly a quart.

In the surgical use of formalin care should be exercised that good drainage is provided for. A two-per-cent solution will cause a superficial slough, and a one-per-cent solution is quickly destructive of fresh granulation. No solution, however weak, should be applied to any surface where primary union is expected.

Vandermarker has used full-strength commercial formalin to epithelial cancers of the skin. It is more rapid than arsenic paste

and can be applied upon the lip. In one patient where operation was declined, the entire mass came away in four or five applications. The germ theory of cancer which is rapidly gaining ground would justify the use of formalin, it being one of the most powerful germ destroyers that we have.

In disinfecting a room with formalin gas, no apparatus is necessary other than an open tin pan placed over an alcohol lamp. The cracks are stopped, the lamp lighted, and the door closed. The reason that formalin has not come into more general use as a disinfectant is due to the prevalent idea that an expensive apparatus is necessary.

A Case of Hemophilia Treated by Gelatin.—

J. B. Nichols, in the *Medical News* of December 2, 1899, describes the case of a man 24 years old who had received two wounds, one on the anterior aspect of the wrist about four centimeters in length, and one of about six centimeters on the ulnar side, no tendons or large blood-vessels being severed. The wounds bled profusely, and after the usual suturings and dressings continued to bleed. After three days the second dressing was applied. On removing the first dressing a jet of blood spurted for some distance from the wound. This was checked by pressure. Three days later a third dressing was applied. The edges of the wound on the front of the wrist were found softened and necrotic. Three hours after the application of the dressings they were completely saturated with blood. During the following night and forenoon bleeding was so profuse as to keep dressings, clothing, and bed saturated. Seven days after the original injury the wounds were found widely gaping, filled with blood-clots and broken-down tissue. The entire forearm was cold and much swollen. A thorough search under chloroform did not reveal any severed vessels. The tissues were saturated and infiltrated with clotted blood, and were soft and pliable. The bleeding was a general oozing from the tissues and was not checked by the tourniquet. Sterilized ten-per-cent gelatin was melted and poured into the wounds, and they were dressed. Little hope of the patient's recovery was entertained, but with the use of the gelatin there was a marked change for the better. No bleeding occurred, the pain disappeared, and the patient was able to sleep. The condition of the wound improved, and the swelling and cyanosis disappeared. A second dressing of gelatin was employed, which was followed by healthy granulating surfaces, and five weeks later the wounds were healed.

The Free Drinking of Water in Acute Hemorrhage.—

Louis Kolipinski, in the *Maryland Medical Journal* of December 30, 1899, calls attention to an effective method of overcoming hemorrhage by the free drinking of water, which would certainly have been deemed worthy of report had it been brought about by a subcutaneous injection of normal saline solution, one of the latest and best approved methods of overcoming the effects of loss of blood. The case was one of typhoid fever, in which the patient was thoroughly exsanguinated. When seen she was cold and clammy, with a tendency to grow drowsy and to faint. The breathing was deep and hurried; the pulse could scarcely be felt at the wrist and could not be counted. The patient was at her home, where skilled assistance was not obtainable without great sacrifice of time. She was given a hypodermic injection of strychnine and atropine, and thick cold poultices applied to the trunk from the clavicles to the groin. The patient was given a tumbler of water, which she drank with effort and delay. This was repeated every five minutes until she had emptied four glasses. The remainder of the night she was plied in the same manner until twenty-four tumblers of water had been given. The next morning there was no recurrence of the hemorrhage, the girl revived completely, and the radial pulse was strong at 108 beats per minute. After the hemorrhage there was a further rise of temperature, which yielded to a single application of the wet pack, and the patient made a good recovery.

Serum in the Treatment of Malignant Syphilis.—

Augagneur, in the *Annales de Dermatologie et de Syphiligraphie*, 1899, p. 433, describes certain cases of malignant syphilis which did not yield to syphilitic treatment. In two of these cases complete recovery was secured by the injection of Hayem's artificial serum. One of these patients presented, two months after the initial lesion, a papillary eruption, with grave disturbances of the general health, emaciation, weakness, loss of appetite, diarrhea, articular pains, and an evening rise of temperature. All of these symptoms were aggravated by mercurial treatment. There was injected under the skin a solution composed of seven parts of chloride of sodium, two parts of crystallized disodic phosphate, one thousand parts of water. The injections were given every eight days, and were followed by polyuria, disappearance of the general symptoms, and complete recovery from the skin eruption. The second patient was suffering from tertiary involvement of the nose and mouth and tubercular ulcers of

the trunk and extremities. There was little improvement with the mixed treatment, but similar injections employed as in the first patient resulted in a marked amelioration at the fourth injection.

Desiccated Suprarenal Capsule in Acute Coryza.—

F. H. Milliner read a paper on this subject before the Buffalo Academy of Medicine (*Philadelphia Medical Journal*, Dec. 16, 1899). He said that the use of this substance internally or hypodermically requires careful watching; locally applied, the drug is never followed by alarming manifestations. When applied to a congested nasal mucous membrane, such as is present in acute coryza, there is a rapid whitening and shrinking. The aqueous extract is prepared as needed, by dissolving twenty grammes of the dried capsule in one-half ounce of water and filtering through cotton. After cleansing the nose with an alkaline wash, the solution is applied either with pledgets of cotton or through an atomizer. Each application gives relief from the distressing symptoms for several hours.

Beta-eucaine in Urethral Surgery.—

Gerald Dalton, in the *Therapist* of December 15, 1899, says that this local anesthetic is equal to cocaine in anesthetizing the urethra, and it has the advantage of being much less toxic. The anterior urethra is readily anesthetized with one drachm of three-per-cent solution of beta-eucaine thrown into the canal by an ordinary urethral syringe. The solution should be retained in the passage from five to ten minutes. If it is desired that the prostatic portion or the neck of the bladder be anesthetized, it would be necessary to carry the solution deeply into the urethra with a prostatic syringe. The anesthesia remains a varying period of from five to twenty minutes. Resistance to the action of the anesthetic is less often encountered than with cocaine.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

A Clinical Study of the Lymph Glands in One Hundred Cases of Scarlet Fever.—

Jay F. Schanberg, in the *Annals of Gynecology and Pediatry* for December, 1899, says the enlargement of the lymphatic glands is spoken of as occurring in German measles, in which it is mentioned as a diagnostic feature. Its occurrence in scarlet fever is casually, if at all, referred to in many text-books on the practice of medicine.

He gives the tabulated results of an examination of the superficial glands in one hundred cases. There is a table in which are noted the day of commencement of the disease, the size of the glands compared with common objects, such as peas, beans, almonds, hickory-nuts, etc. A summary of this table shows the following:

Inguinal glands	100 per cent
(*a*) pea-sized	23 per cent
(*b*) bean-sized	77 " "
Axillary	96 " "
Maxillary	95 " "
Posterior cervical	77 " "
Anterior cervical	44 " "
Submaxillary	36 " "
Epitrochlear	26 " "
Sublingual	25 " "

The patients were examined at various stages of the disease, as early as the second and as late as the sixteenth day. The day in which the glandular tumefaction began could not be ascertained, as no cases were seen earlier than the second or third day. After defervescence the swelling would gradually disappear. The diagnostic aid in differentiating scarlet fever from diphtheria is of inconsiderable value. In measles also there is a geueralized glandular enlargement, but in the majority of cases the adenopathy is not so frequently observed. The possibility of the enlargement having antedated the attack of scarlet fever is considered by the writer. There is a considerable percentage of healthy children with inguinal glands the size of a pea or larger. In most cases it was not difficult to distinguish between an old and a recently enlarged gland, the former being decidedly harder than those of recent occurrence. While the inguinal glands are frequently enlarged in comparatively healthy individuals, and the glands about the neck in those suffering from throat inflammation, this is not true to the same extent of the axillary and epitrochlear glands. The adenopathy does not appear proportionate to the rash, but is related to the toxemia. In patients with high temperature and well marked eruptions, the enlargements of the glands were most marked. Occasionally the glands may be enlarged in cases presenting mild symptoms.

Unguentum Crede in the Treatment of Sepsis.—

S. Marx, before the New York Academy of Medicine (*Medical Record*, Dec. 9, 1899), reported a case in which there were most gratifying results following the use of this remedy. The case was one of puerperal septicemia; the highest temperature was 102.5°, with a pulse of 120. Infection had followed a premature birth,

which had been brought about because of a grave and rapidly increasing melancholia. On the third day temperature had risen suddenly to 102.5°. At the time physical examination was negative. Later, typical pseudodiphtheritic patches were noted in the genital tract. The parts had been thoroughly cauterized with pure carbolic acid, chloride of zinc, and solution of iron, but without results. The parts had been irrigated very frequently, but there was absolutely no improvement. Repeated chilly sensations had been complained of. The ointment was first used in the evening, and by the next morning there was a decided improvement in the membranous patches.

In the discussion John Polak said he had employed Crédé's ointment, and the results had been variable; in one most excellent, and of the more significance because no other treatment had been used. The case was one of late and persistent sepsis, in which the ordinary local treatment would not have been of value.

S. S. Jones said that he had used Crédé's ointment in a number of cases in which fever and other symptoms pointed to a mild sepsis.

H. N. Vineberg believed that he had seen life sacrificed by depending upon the unguentum of Crédé. Such a remedy might be used by experienced physicians, but the trouble with methods of this kind is that necessary discrimination is often lacking.

Unexpected Dystocia in Multiparæ.—

E. S. Bolland, in the *Boston Medical and Surgical Journal* of December 28, 1899, reports under this ambiguous term a class of cases which form a very striking group in obstetrical practice. They occur in women who have had one or more normal deliveries, and in whom a perfectly normal parturition may be expected. They are characterized by frequent but inefficient pains. Dilatation is slow, the presentation movable, but there is no engagement at the superior strait, and no progress in the case. After waiting some hours, or even days, the pulse and temperature rise, with other signs of exhaustion. The causes of the dystocia in these cases are very obscure. It has been suggested that the shape and position of the uterus are altered. Another is that the muscles of the abdomen and other structures are unduly relaxed. It is not possible to give the exact figures as to frequency, but such a condition as he describes he thinks occurs about once in 150 to 200 cases. If the breech presents, the feet should be brought down; if the head presents, the tentative use of the forceps offers the best results. The infant mortality is high, whichever method is followed.

A New Method for Anesthetizing in the Knee-chest Position.—

C. A. Penrose, in the *Johns Hopkins Hospital Bulletin* for November, 1899, says that the importance of the knee-chest position in the surgery of the bladder and rectum is so well established that it calls for no emphasis. No other position allows of such complete distention of these organs, nor so great facility in their examination or typical treatment. In this position the entire mucous membrane of both bladder and rectum may be explored. Anesthesia in the knee-chest position is attended with some difficulty and not a little danger. He has contrived a holder which consists of two upright padded pieces and a strip which encircles each thigh, the knees and legs resting upon two horizontal padded cushions with straps passing around the calves. The shoulders are supported by two curved uprights in such a way as to pass across the upper part of the shoulder and under the arms as they hang forward. Between these is a cushioned shelf, upon which the cheek rests with the head turned sidewise. By means of a ratchet and chain the distance between the knee and shoulder-pieces is lengthened to correspond with the different lengths of body of different patients, and the required height of the pelvis in different operations.

FORENSIC MEDICINE.

Failure to Attend on the Part of a Physician a Breach of Trust.—

The *Boston Medical and Surgical Journal* of December 28, 1899, reports an unusual breach of trust. A claim of $5000 has recently been brought against a Hartford, Conn., physician. It was claimed that the physician had agreed to take charge of a maternity case, but was not present when the child was born. A few days later the child died. The physician was then sued for a breach of trust, seeking to hold him responsible for the death of the child. The defense to the complaint stated that the father could not have acted as the agent for the unborn child, and that the doctor did not contract with the child for its delivery. As the suit was brought because of the death of the child, the defense claimed that it should be quashed. The judge ruled that suit may be brought in behalf of a child unborn when its parents have made a contract to deliver and care for it after its birth, and found true cause for action on the part of the parents. The case has aroused considerable interest throughout the State, and is the first of the kind brought under the Connecticut statutes.

An Action for Medical Malpractice Will Not Hold Against a Druggist.—

The *Philadelphia Medical Journal* of December 16, 1899, mentions an opinion just handed down by Justice MacLean, of New York. It is stated that a person receiving emergency treatment from a druggist cannot recover, should the treatment be followed by untoward results. The case in point was that of Ferdinand Roth, a butcher, against the drug firm of Arneman & Behrens. The allegation was that Roth had gone to the drug store of this firm to have a cut on his thumb treated, and that the clerk had bandaged the wound and given the plaintiff a small bottle of carbolic acid, with directions to keep the dressings wet with the application. It was alleged as a result of this treatment that inflammation and blood poisoning supervened, necessitating the amputation of the thumb. The defense moved for a dismissal, on the ground that druggists were not permitted by the laws of the State to practice medicine or surgery, that the plaintiff should have gone to a qualified practitioner for treatment, and if any action at law could be taken, it could only be against the drug clerk. . The court took the same view and dismissed the case, as already stated.

Substitution by a Chicago Druggist.—

According to the *Chicago Times-Herald*, Judge Kohlsaat, of the United States Circuit Court, has handed down a decision from an injunction obtained by Fairchild Brothers & Foster against one Edward Otto, a Chicago druggist. The New York firm charged the druggist with substituting a spurious and inferior preparation for Fairchild's essence of pepsin in several cases where the latter was especially called for in physicians' prescriptions. Judge Kohlsaat sustained the charges, warned Otto against repeating the offense, and taxed him with the cost of the proceedings. This is said to be the first contested case in the United States in which the principle of protection to trade-marks and trade-names is extended so as to apply to what is known in drug business as substitution.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

THE OPERATIVE TREATMENT OF FRACTURE OF THE PATELLA —A CLINICAL LECTURE DELIVERED OCTOBER 20, 1899.

BY CHARLES GREENE CUMSTON, M.D.,
Assistant Professor of Surgical Pathology in the Faculty of Medicine of Tufts College, Boston, Mass.

We have at present under our care a woman of 40 years, who fell upon the ice about nine months ago and sustained a transverse fracture of the right patella. I will take this opportunity to say a few words on the operative treatment of such cases. The physician summoned at the time of the accident diagnosticated the fracture and placed the leg in a plaster dressing, which was worn by the patient six weeks. After its removal, when the patient tried to walk, the right leg was found to be practically useless; she has been confined to a chair or to walking with crutches ever since.

Examination of the parts shows that the upper and lower fragments of the patella are united by what is probably fibrous tissue; they are four centimeters apart; the union is nothing but a broad band of cicatricial tissue. I have advised the patient to submit to an operation for the proper union of the broken bone, which if successful will restore the functions of the leg more or less completely.

The operation for fracture of the patella may be divided into three steps. The first is the opening of the joint and freeing the fragments of bone. The cutaneous incision, which should be carried through the underlying tissues as well, is naturally made on the anterior aspect of the knee, but there are various ways of making it. Koenig, for example, makes a transverse incision over the space separating the fragments. The resulting cicatrix is sometimes burst by exaggerated flexion of the knee. Still more important to bear in mind is that such a cutaneous cicatrix may

unite with that of the boue, and if the patella is fractured again the skin will open with the fracture. We shall then have an opening communicating with the joint. Other surgeons make a median longitudinal incision about five centimeters long, but if you wish to drain, and this is often necessary, two small lateral incisions must be made for the passage of the tubes or wicks. A curved incision similar to the one made for resection of the knee, extending from one condyle to the other and passing over the space between the fragments of the bone, does not entail other incisions if drainage is deemed advisable, as the tubes are placed in the angles of the wound. This incision may be made with its base above or below the joint.

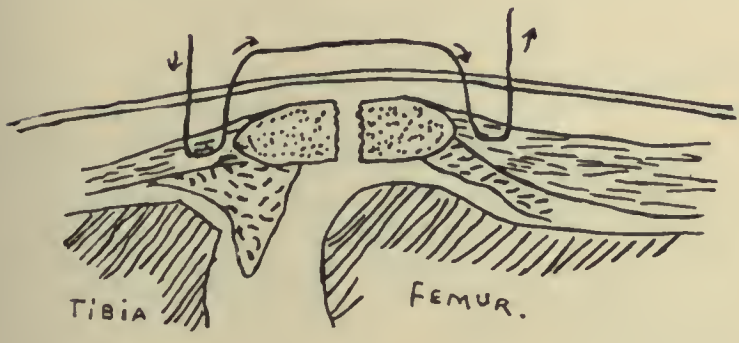
Certain conditions are uecessary for a proper incision which are met by those which I have employed in operating on cases of old or recent fractured patella. First, the incision should be made so as to give plenty of space, and at the same time freely expose the joint, especially when we are dealing with an old fracture. Secondly, the flap should be well supplied with blood at its base, and the latter should be broad in proportion to the height of the flap. The curved flap, as made by Trendelenburg and Lucas Championniere, is poorly supplied with blood because the important vessels on the internal aspect of the knee are severed. Thirdly, the cutaneous incision should be as far away as possible from the cicatrix in the bone.

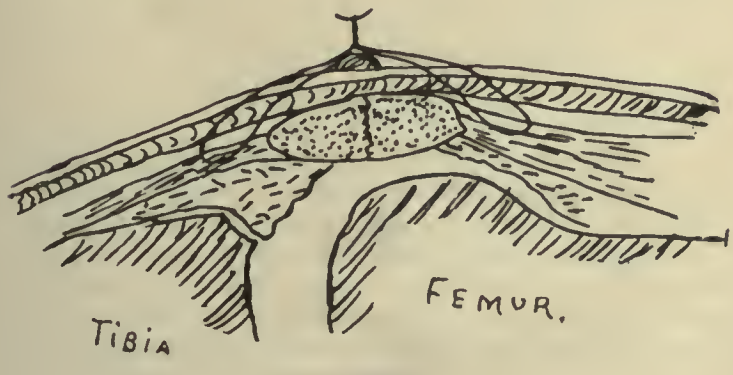
Having pointed out to you what seems to me to be very important, I will now describe the incision that I prefer. We should keep at least four or five centimeters away from the borders of the patella, as is shown in this drawing (Fig. 1), while the incision is carried around the fragments which it comprises in its concavity. It is begun above the internal angle of the upper fragment, carried outward, and then brought down vertically along the external aspect of the knee; when it has passed the lower fragment of the patella it is carried *almost* to the anterior tuberosity of the tibia. This incision is of much value when there is considerable separation of the fragments, but when they are quite near together I think that a curved flap with its convex aspect upward is perhaps the best (Fig. 2).

When you are called to a case of fracture of the patella that has just taken place—that is to say, within a few hours—I think the proper course to pursue is to immediately wire the patella subcutaneously, if the fragments can be nicely approximated. Here no incision is made, and consequently the joint is not exposed, but the operation requires just as much care in asepsis as if the joint were to be opened; otherwise the suture material will carry pyogenic bac-

FIG. 1.

FIG. 2.





FIGS. 3 AND 4.

teria with it, and inoculate the deep structures, resulting in infection with all its disastrous consequences.

The fragments may be held in contact by passing the wire above and below in the tendon (Figs. 3 and 4), or it may be passed around the patella and through the tendon (Fig. 5), or simply around the patella, only including the ends of the tendon (Fig. 6).

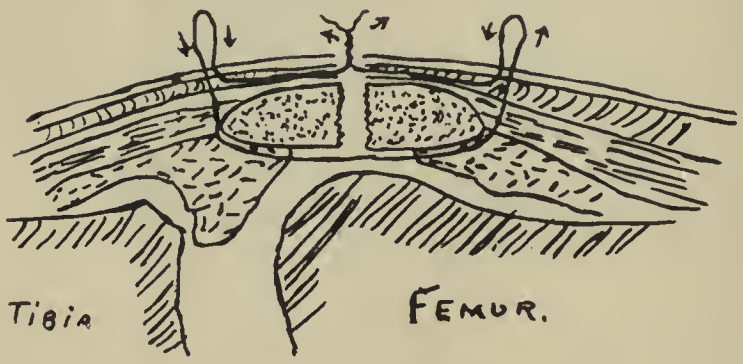


FIG. 5.

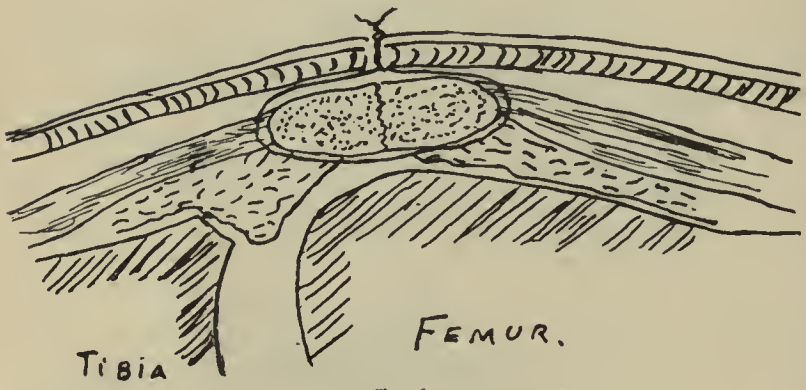


FIG. 6.

Any one of these methods is good, but personally I would resort to that in which the patella and tendons are wired and the suture made to pass out and in through the skin, at a point just above and below the limits of the bone, and then, passing the free ends of the suture through the aponeurosis, bring them out at a point just over the line of fracture, twisting them there. You then have an almost completely buried suture which does not press upon the skin, and where all the points will be brought tightly together.

In old cases, or those in which approximation of the fragments cannot be obtained on account of blood or shreds of periosteum between them, the open method must be used. After the skin incision is made, explore the joint carefully to ascertain the extent of the injury; clean out all blood-clots and shreds of periosteum and aponeurosis which are usually present, especially in recent fractures. Leave nothing which will prevent a neat and exact approximation of the fragments. In old fractures the cleaning of the joint is always more complicated, and often quite difficult, because the fibrous adhesions and bands must be cut and the bony surfaces freshened with hammer, chisel, and scissors. It sometimes happens that incisions must be made in the aponeurosis and even the triceps, but before resorting to these measures, if the fragments are not easily approximated, they may be made to come in contact by elevating the thigh and leg.

Next the fragments must be drilled, the wires passed and tied. The number of sutures necessary to securely hold the fragments in apposition varies according to the fracture. The drill should not be directed perpendicularly to the anterior surface of the bone, but with slight obliquity, so that it will come out through the surface of the fracture just above the cartilage. If wires are passed through the thickest part of the fragments above the cartilage, we keep *outside* of the joint, which is important. A flat retractor placed back of the patella will render the drilling easy and will at the same time prevent the point of the drill injuring the joint. To avoid the joint and obtain solid union, I have been in the habit of drilling a triangle in each fragment with their apices pointing toward each other, so that when the fragments are approximated the wire can be passed through the patella and buried in the bone except at one corner, where the two ends come out and are twisted together (Fig. 7).

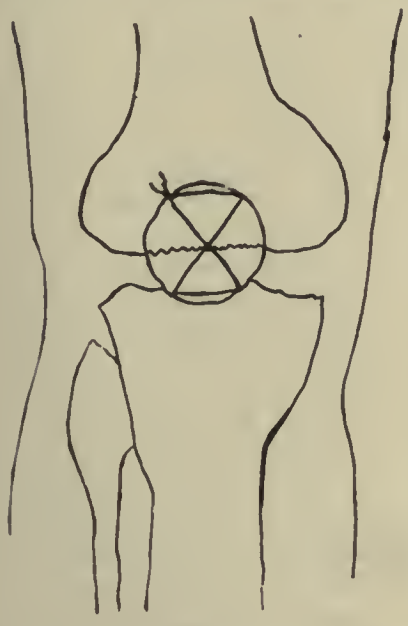


FIG. 7.

When one of the fragments is very small, the wire should be passed through the ligament of the patella or through the tendon of the triceps, or, if the line of fracture is oblique (Fig. 8), the bone should be sutured in the same manner as in the transverse form (Fig. 9).

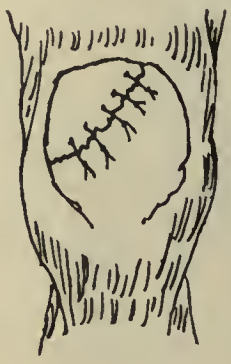


FIG. 8.

FIG. 9.

After the wires have been inserted the ends should be twisted on the anterior aspect of the bone, while an assistant holds the fragments in apposition. The cartilaginous surface of the bone must be perfectly united, and care must be taken to have the lower aspect of the fragments on the same level. The ends of the twisted wire should be cut quite short, and then hammered well down on the bone.

FIG. 10.

When the fracture is of long standing and the fragments are separated by a certain amount of fibrous tissue, as here represented (Fig. 10), the latter should be freely excised, the borders of the fragments freshened, and then held in apposition by a suitable number of sutures.

The results obtained by suture of a fractured patella are, in most instances, more than satisfactory, but I would remind you that any operation involving a joint—in other words, a serous cavity—requires great care in order to avoid infection, and here, just as in the peritoneal or pleural cavity, asepsis must be perfect; otherwise the patient may be worse for the operation.

THE NATURE OF NEURASTHENIA: A STUDY OF THE RECENT LITERATURE.[1]

BY ROSALIE M. LADOVA, B.S., M.D., CHICAGO, ILL.

Neurasthenia is a general chronic functional neurosis, a state of continuous exhaustion and irritability of the nervous system. In neurasthenia we find practically the same conditions that are met with physiologically in fatigue.

The predisposing cause is heredity, either neuropathic or arthritic. The determining causes are trauma, toxemia, anemia, overwork, worry and anger, exhausting chronic and acute diseases, misfortune, alcoholism, mental shock, violent emotions, crisis of puberty, sexual and other excesses, and Platonic love.

Heredity undoubtedly furnishes a favorable soil for the development of the disease, and where present the trouble usually begins early in life and runs a more severe course. M. Bidon[2] reports two hundred observations. In forty-four there was no heredity; the trouble began between the ages of 30 and 40 and was not so grave. In forty-five there was distinct heredity, and the disorder began before the age of 20. Apoplectic heredity is the slowest in its manifestations. Professional overwork acted in fifty-three cases, trouble in seventeen, influenza in seventeen, business worry in nineteen, sexual excesses in seventeen, alcoholism in three; no cause could be traced in nineteen cases. The intensity of the determining cause is in inverse proportion to the hereditary predisposition.

Bidon contends that neurasthenia is etiologically allied to degeneracy. The study of the posterity of neurasthenics strongly points toward this view. Of his two hundred cases, fifty-one are bachelors and one hundred and forty-nine married; of one hundred and twenty-nine of the latter, forty-two are sterile. The remainder have one hundred and fifty-two children, classified as follows: One, superior; thirty-two, normal; twenty-four died of eclampsia; twenty died of physical ailments; and eighty-seven have psychical defects. This shows that neurasthenia is the beginning of degeneracy. Both appear to be due to the same arthritism which brings about in a few generations the extinction of those urban families which have failed to regenerate themselves with rural blood.

Grandholm[2] regards the too extensive and too frequent social intercourse of the world as the principal cause of neurasthenia. The effect of society life is extremely stimulating, through various and

[1] Read before the Chicago Medical Society, Jan. 24, 1900.

[2] *Archives de Neurologie*, 1899.

numerous sensations and impressions. A state of excitement ensues which continues some time after each social affair, and if the latter is frequently repeated a state of constant excitement prevails, when the individual loses more or less control over the nervous system. By and by this life of excitement becomes a habit, and the individual is incapable of regular occupation. Lack of necessary rest weakens the resistance of the organism. Especially in children one often meets with nervous troubles as a result of a too early exercise of the social function. Unless the child is watched carefully, he is soon nervous and irritable. In spite of rest through the night the excitement persists, and rest and even isolation may be necessary.

Priantaphykides[1] reports fifty cases of malaria where the only symptom was neurasthenia, evidently due to the intoxication. Plasmodia were demonstrated. The therapeutic test gave positive results.

Gattel[2] collected one hundred cases. He claims that not one of these led a normal sexual life. They were all between 20 and 30. His experience leads him to think that in all cases of neurasthenia there is a sexual element underlying it, and even where overstrain, anemia, worry, mental overwork, etc., are essential causes, careful inquiry will elicit a past sexual element. He goes so far as to state that where there is a history of normal sexual life, one has to be careful in diagnosticating neurasthenia, unless he can positively exclude organic disease, if only in its incipiency.

Tschisch,[3] of Dorpat, Russia, speaks of coitus reservatus as a potent cause of neurasthenia. He reports seventeen cases—eleven men and six women—where there was no hereditary predisposition and no other influence leading to it. The most marked symptoms were fear and apathy. The disease developed on the average about two months after beginning the practice. He also knows of thirty-six cases—twenty-seven men and nine women; twenty-nine of these complained of an unaccountable feeling of fear. In these cases there was a history of sexual abstinence of from two to four months. This is the first research in this line in Russian literature.

Platonic love is claimed by Pleury[4] to be a more frequent cause than sexual excesses, especially where the object of affection is frequently met and emotions are in this way brought into play. Unrequited love, and otherwise unfortunate love affairs, where a naturally proud and sensitive individual is compelled by force of

[1] *Archives de Neurologie*, 1894.
[2] *Deutsche Medicinische Wochenschrift*, 1898.
[3] *Neurologisches Centralblatt*, 1896.
[4] *Revue de Médecine*, 1896.

circumstances to lead a life of hypocrisy and deceit, may be safely added to the list of causes of neurasthenia.

Biernacki,[1] of Warsaw, Russia, asks himself the question, "Are the nervous manifestations of neurasthenia primary or secondary?" This question came to his mind as a consequence of the blood examination of two severe cases of neurasthenia. Notwithstanding that the blood, as regards water, hemoglobin, inorganic constituents, blood-count, etc., was found normal, or almost normal, there was a peculiarity noted in the way in which it coagulated. It precipitated as slowly as blood minus fibrin. Fresh blood of neurasthenics coagulates slowly and there is a very small amount of fibrin. In quantitative determination of fibrin in two cases of neurasthenia, 1.7 per cent was found instead of the normal two per cent; in the hysterical, on the contrary, four per cent was found. The technique of the procedure is as follows: One cubic centimeter of blood is drawn through a puncture in the median basilic vein and placed immediately in graduated one-tenth cubic centimeter cylinders for sedimentation. Within an hour the greater part of the plasma is obtained. Spontaneous blood sedimentation is not a mechanical process, but is in relation with the amount of fibrinogen; the more fibrinogen, the quicker the sedimentation, and *vice versa*.

Investigation of eighteen cases showed that in neurasthenia with pronounced symptoms the blood sedimentation was generally protracted; in hysterics it was accelerated. The volume of the sediment, except in regard to the number of red blood-corpuscles, was greater in the first, smaller in the second. The specific gravity of the blood was normal. In seven quantitative determinations of fibrin, twice abnormally high and twice abnormally low figures were obtained.

Luxemberg,[1] at the suggestion of Biernacki, investigated thirty-eight cases of neurasthenia and hysteria. The blood-counts and amount of water in eight-tenths of the cases were absolutely normal, even with patients of anemic appearance. Sedimentation anomaly was present in almost every case; in three-fourths of the cases it was very marked. Fibrinogen was frequently abnormally high or low. In hysteriacs and neurasthenics the amount of fibrinogen and its relation to that of fibrin is constantly abnormal. This fact acquires more significance when we consider the physiological rôle of fibrinogen. It gives to the blood the properties of living tissue; it regulates its oxygen-carrying capacity, governs the amount of oxygen in the blood, and brings the formation of fibrin

[1] *Neurologisches Centralblatt*, 1898.

in relation with the formation of carbonic acid gas. Fibrinogen should be looked upon as albumin in a state of oxidation. The process of sedimentation being connected with the amount of fibrinogen, and this having to do with oxidation, the former has a direct bearing on oxidation processes.

That this is not altogether a hypothesis is seen from the following: In some neurasthenics the venous blood is of a lighter hue, together with a normal blood-count and water and hemoglobin amount. Luxemberg observed this in ten out of his thirty cases. In the absence of hydremia, the lighter color must be due to a surplus of oxyhemoglobin. In one case 13 per cent of carbon dioxide was found from actual estimation of the carbonic acid.

Is the sedimentation anomaly primary, and the neurasthenia secondary, or *vice versa?* The fact that the sedimentation anomaly is constant speaks for its being primary. Secondary factors are seldom constant. Only primary phenomena as causes are constant and specific. Rapid sedimentation, as in hysteria, is also found in febrile affections, tuberculosis, anemia, etc. Slow sedimentation, as in neurasthenia, is found in renal disease and cardiac affections. But in these there is hydremia of different degrees, whereas in functional neuroses it is the case only exceptionally.

Charcot[1] has called attention to the fact that in neurasthenic families, gout, diabetes, obesity, and chronic rheumatism are frequently observed. Once we accept the existence of secondary neuroses, the question arises whether neurasthenia and hysteria are not a secondary symptom-complex of the central nervous system.

So far as the secondary neuroses follow affections caused by disturbed oxidation, and in this way appear as hereditary equivalents, the thought naturally occurs to us whether these are not a sort of oxidation disturbance with nervous symptoms. The supposition is rendered probable from the fact that hysteria may follow purely material agents exerting a marked influence on oxidation processes in the living body — as intoxication and febrile diseases. The blood findings point to the constant existence of disturbance in oxidation processes.

It appears probable that the so-called functional neuroses are not primary diseases of the central nervous system, but a secondary symptom-complex in consequence of the activity of products of primary oxidation disturbance on the nervous system. The functional neuroses are probably affections of the same nature as diabetes, gout, obesity; the principal pathological conditions rest on

[1] *Neurologisches Centralblatt*, 1898.

abnormal oxidation processes. The fact that functional neuroses generally follow psychical excitement speaks but little for their primary nature. Attacks of gout or aggravation of symptoms of diabetes are also frequently observed under the same influences.

Matiew and Pleury[1] concur in the opinion that none of the theories so far advanced to explain the exact nature of Beard's disease is fully satisfactory. None of them corresponds to the *ensemble* of facts, and as Pleury expresses it, it is sufficient to examine with impartiality the doctrine of autointoxication of Bouchard; of variations in nutrition of dyspeptic origin of Hayem and Winter; that of enteroptosis of Glénard; reflex action of gastro-intestinal origin of Leven; of vasomotor disturbances of Dumas; of excess of vibrations of cerebral cells and disturbed balance between waste and repair of these cells of Beard; of disturbance in nutrition of nerve elements of Erb; of hypotonus of cerebrospinal centers of Cheron—in order to come to the same conclusions. There is no question more instructive, from the standpoint of general physiology and psychology, than these problems touching on force and fatigue. But who will tell us whether fatigue is a phenomenon primitively dynamic or toxic? Does the nerve cell become exhausted mechanically through excess of function, or does it functionate improperly through the penetration into its substance of chemical poisons, producing important changes in the chemical composition of the protoplasm?

It is impossible to deny the existence of neurasthenia of toxic origin. The most striking illustration is a record of fifty cases of malaria of Priantaphykides,[2] of Batum, where plasmodia were demonstrated and the therapeutic test gave positive results. Neurasthenia was the only symptom in these cases.

Many of us have seen grave cases of neurasthenia following light attacks of influenza with a minimum of inflammation, when the disproportion between the nervous phenomenon and the apparently benign character of the grippe was rather striking. These should be distinguished from cases where a violent inflammation of a mucous membrane may determine a veritable shock to the nerves of the affected region. These should not be compared with cases of profound atony following long protracted diseases, when the brain with the rest of the body has entered a state of profound inanition through inactivity. The toxic theory cannot be denied, but the toxins are carried by the blood to the nerve cells, on which they act chemically by exchange and irritation, bringing about overaction

[1] *Revue de Médecine*, 1896.
[2] *Archives de Neurologie*, 1894.

mechanically. We attribute to the nerve cell but one well defined property, and that is irritability. It is possible that the toxin only acts as an irritant to the nerve cell, exciting it to activity to the degree of exhaustion. Muscle contraction produces waste, and these products in an organism with poor elimination must be very dangerous. The production of lactic acid and other waste products appears as a secondary phenomenon subordinate to a purely dynamic factor, namely, tone. It is constantly becoming more evident that fatigue and chemical phenomena accompanying it are in proportion to the amount of nerve energy the muscle receives from its motor and trophic centers. For a muscle to become promptly exhausted, to become acid instead of being alkaline, it is necessary that it should be supported to a moderate degree by its nerve centers.

Studying the physiology of walking, and still better, bicycle riding, we notice that training and habit reduce fatigue to a minimum. On a plane a bicyclist may go on propelling almost indefinitely, without any appreciable fatigue; signs of fatigue become evident only in riding up-hill—that is, when volition has to work against the force of gravity. Here automatism is not sufficient, and the muscle and spinal functions not being equal to their task, the brain is called to action, and it is only then that the muscle produces poison and fatigue supervenes. Fatigue, then, is primarily a phenomenon of mechanical exhaustion of the cerebral cell. Production of toxic material appears only secondarily, but no doubt it influences in its turn nutrition; this rôle, however, has not the importance many wish to ascribe to it. It is probable that in old cases of nerve exhaustion there is a state of inanition of the cerebral cell as of the rest of the body, and that variations in the state of nutrition are subordinate to variations in the activity of the nervous system.

CONCLUSIONS.

1. Nerve exhaustion, fatigue, primarily a simple detention of reflex tonus, become only secondarily a chemical phenomenon; defective nutrition.

2. Any purely mechanical stimulation of any of our peripheral nerves determines first increased tension of the general tone, an increase in energy, heightened intensity in the activity of all our organs, and later on augmentation in the combustion process. The nature of fatigue is primarily dynamic, and the primary source of vital energy is not in the nutrition, but in the centripetal nerve irritability.

601 NORTH ROBEY STREET.

THE INTESTINAL NEUROSES.

BY WM. J. ROTHWELL, M.D., DENVER, COLORADO.

Under this heading are included those morbid processes in the intestines not due to demonstrable organic change either in the viscera themselves or in their nerves.

Intestinal innervation takes place through the vagi and the splanchnics — the plexuses of Auerbach and Meissner acting as distributors of nervous influence. The excitomotor fibers for the musculature of the intestines pass through the vagi. This is shown by the fact that irritation of these nerves excites peristaltic movements. The power of inhibiting these muscular movements must be in the splanchnic nerves, since irritation of the latter invariably inhibits peristalsis. Since irritation of the splanchnics produces anemia and section hyperemia of the intestinal blood-vessels, the vasomotor nerves must be contained in them. While we know little about the secretory and sensory nerves of the bowels, there is no doubt that they have the same course as the inhibitory and vasomotor nerves. The functions of all or any of these nerve groups may be disturbed primarily, secondarily, or reflexly. They are often primarily affected in such general neuroses as hysteria, neurasthenia, and hypochondria. The visceral crises of locomotor ataxia and the spastic state of the longitudinal and circular fibers in cerebral meningitis are secondary phenomena. Chronic constipation or diarrhea, promptly relieved by the cure of an ulcerated os, may be safely classed as reflex neuroses.

This paper will be limited to a brief study of the primary intestinal neuroses. They consist in disturbances of motility, sensibility, and secretion. The irritability of the motor nerves may be increased, diminished, or abolished. There is a form of peristaltic restlessness dependent upon an excessive irritability of the motor nerves of the small intestines. It occurs for the most part in neurotic women. There may be associated with it also a similar restlessness of the gastric musculature. The peristaltic movements are so much increased as to produce rumbling, gurgling, croaking, or squeaking noises in the bowels, distressingly audible to the sufferer and embarrassing to those around her. In persons with thin abdominal walls they are often visible and palpable. Emotional excitement is especially apt to set these peristaltic waves in motion. They are, therefore, very annoying in social life. For a similar reason, when such patients consult a physician the noises are easily heard. That the

increased mobility does not extend downward beyond the ileocæcal valve is evident from the fact that these noisy movements are never immediately followed by alvine discharges, which would certainly take place were the colon simultaneously involved. On the contrary, such patients usually suffer from constipation as a part of the general nervous condition. These stormy movements are usually painless, but when there are in addition impaired intestinal digestion and gaseous distention of the bowels they often cause pain.

There is another affection, depending upon a more pronounced irritability of these motor nerves, in which the exaggerated peristaltic waves do not terminate at the valve of Bauhin, but extend into the colon and upper rectal region. In this case they are always followed by precipitate bowel movements, at first solid and afterwards semisolid or liquid. A very trifling excitement may be sufficient to start the morbid process. Any psychic disturbance whatever may serve to liberate these impulses. Fear, anxiety, or the receipt of a telegram may be followed by frequent bowel movements. One suffering from this neurosis, finding himself where there are no conveniences for his natural wants, becomes anxious in consequence, and is at once attacked with nervous diarrhea.

These spasmodic involuntary discharges of motor nerve force in the intestinal tract seem analogous to the nerve storms of hysteria and epilepsy, notwithstanding the great difference in their clinical manifestations. In both there is abnormal irritability of a part of the nervous system, involuntary discharge of motor force, and spasmodic muscular contractions.

Another disturbance of the motor innervation of the bowels manifests itself in a concurrent spasm of both the round and long muscular fibers. Normal peristalsis is the result of alternating motor impulses to those two sets of fibers acting in such a way as to inhibit the action of the circular fibers while the longitudinals are contracting, and *vice versa*. In this disturbance both sets of fibers contract simultaneously and remain in a spastic state as long as the exciting cause continues. This enterospasm diminishes the lumen of the affected segment of the bowel, and checks the onward progress of its contents, which are held in the grip of the contracted part and accumulate above it. I have seen several of these cases of spastic obstipation with colicky pains and a doughy fecal tumor discoverable by palpation at or near one of the flexures of the colon.

The following is cited as a case in point: S. T——, suffering from obstruction of the bowels. A physician had for three days been trying to relieve him by cathartics, enemata, etc. He had

severe pain, a retracted abdomen, frequent vomiting, but not stercoraceous. No marked fecal tumor discoverable, but the pain and tenderness were most pronounced at the left flexure of the colon. All purgations were discontinued, a warm poultice applied, morphine given hypodermically, and six minims of the deodorated tincture repeated every two hours. After twelve hours of this treatment the administration of a simple enema was followed by copious evacuations, at first consisting of small, hard, cylindrical masses, and afterwards of liquid feces. The relief was sudden and permanent. We have all read of the cathartic action of opium in certain supposed idiosyncrásies. In spastic obstruction opium relaxes the spasm and permits peristalsis; this is the condition, I think, in which opium is supposed to act as a cathartic.

In ordinary colic there is a spasm of both muscular layers of the bowels, but it is usually of short duration. There is not necessarily any increased irritability of the splanchnic nerves preceding the attack. The spasm is the result of severe irritation of the sensory fibers by coarse indigestible materials, or accumulations of gas in the bowels, and is a pure reflex from the sensory to the motor nerves of the bowels.

Opinions differ as to the origin of the severe cutting pains of colic. They might be caused by primary irritation of the sensory nerves by the offending material in the bowel, or by compression of these nerves between the tetanically contracted muscular fibers. The pain is probably due to pressure, for it resembles that caused by cramp of the crural muscles, and antispasmodics, by relaxing the spasm, relieve it as completely as anodynes.

As already mentioned, there is a rich plexus of sensory nerves in the intestines, subject to the same functional disturbances as these nerves elsewhere, viz., anesthesia, hyperesthesia, and neuralgia.

We know little or nothing of anesthetic states of the bowels, because normally they transmit to consciousness no sensation of the processes going on within them. Peristalsis, secretion, digestion, and the downward movements of the intestinal contents take place unconsciously. Anesthesia of the bowels can, therefore, have no diagnostic symptoms, but of its existence in hysteria in company with general anesthesia of the skin and mucous membrane there can be little doubt.

The lower portion of the rectum is a fortunate exception to the rule above mentioned. Its sensibility is acute, and impressions received by it are promptly reported to consciousness. When its nerves become anesthetic, as is sometimes witnessed in hysteria, involuntary fecal discharges may occur as in organic diseases of the

spinal cord. Involuntary passage of feces by hysterical women has been observed by me, but I cannot recall a single case of urinary incontinence in such persons.

Hyperesthesia of the intestinal nerves may account for the many disagreeable sensations in the abdomen of which neurotics complain. When such a patient complains of a sense of fulness or distention of the abdomen without any meteorism or tympanites, of a sense of soreness without any discoverable organic cause, of disagreeable throbbings, flutterings, etc., we may reasonably conclude that they all owe their existence to hyperesthetic nerves.

A state of increased excitability of the sensory nerves, accompanied by paroxysms of severe pain, is a not uncommon visceral neurosis. The attacks of pain usually begin in the umbilical region and radiate thence to other parts of the abdomen. The pain is of a boring, pinching, or cutting character. The paroxysms may occur at intervals varying from a few days to many months. The intensity of the pain causes coldness of the surface, a feeble and frequent pulse, and vomiting. These attacks of enteralgia so closely simulate acute peritonitis as to be described by some writers for the sake of emphasis as pseudoperitonitis. In enteralgia, however, there is no fever, the pain is relieved by deep pressure, and though vomiting sometimes occurs, there is never obstinate constipation. It has to be distinguished from the painful and inflammatory affections within the abdomen, such as peritonitis, appendicitis, perityphlitis, and from renal and hepatic colic and lumbo-abdominal neuralgia. The intra-abdominal inflammations are excluded by the absence of fever, and the alleviation of the pain by deep, steady pressure. Lumbo-abdominal neuralgia is unilateral, and there is tenderness on pressure on the corresponding sides of the spinous processes of the lumbar vertebræ and at other isolated points, symptoms absent in enteralgia.

Dermalgia, or hyperesthesia of the skin over the abdomen, may simulate this condition. But here the pain is superficial, aggravated by slight pressure or percussion with the ends of the fingers, and if a fold of the skin be raised from the abdominal wall and manipulated it is exquisitely sensitive.

Renal colic might be mistaken for enteralgia when the calculus is large, rough, and slow in passage. Such confusion is unnecessary if we recall the diagnostic features of the latter; a pain coming on suddenly in the lumbar region, extending downwards and inwards in the direction of the ureter, accompanied by retraction of the testicle and a frequent and scanty discharge of blood-stained urine, are symptoms which should not be mistaken for enteralgia.

The secretory nerves are also subject to derangement of function, but its visible manifestations are infrequent. A patient of mine, Mrs. G——, of Denver, a woman of 45 years, debilitated and nervous, passed at times from the bowels white membranous patches freely soluble in weak alkalies, but not in water. The attacks occurred at intervals of a few days and were always accompanied or preceded by severe colicky pain. At the end of six months recovery was complete. This was a typical case of the morbid process which Nothnagel designated as mucous colic—an excessive secretion of mucinoid material coagulating on the inner coat of the bowel and discharged at intervals with colicky pain. The sufferers are usually neurotic females. The excessive glandular secretion is due to disturbed innervation of the mucous follicles. The disease is to be distinguished from membranous enteritis, in which the shreds are fibrinous—an inflammatory exudate.

In the treatment of these functional disturbances we should aim to modify the underlying neuropathic state. I shall not weary you by recapitulating the well known measures employed for the cure of the great neuroses, but shall at once enumerate additional remedies for individual cases. In peristaltic restlessness, in addition to the general treatment, arsenic and methylene blue are especially valuable; the latter in doses of two to three grains, three times a day. In enterospasm sedatives and antispasmodics must take the place of purgatives; opium or codeine by the mouth; warm cataplasms on the abdomen and soothing enemata at intervals. In obstinate cases injections of warm oil will render excellent service.

Enteralgia, being a neuralgia of the bowel, is amenable to treatment by anodynes; codeine and morphine are, of course, indicated. The best result will be obtained by suppositories of the aqueous extract of opium in half-grain doses.

Mucous Colic.—Of the treatment of this affection, Ewald, in the Twentieth Century Practice of Medicine, writes as follows: "According to my experience, there is hardly an affection of the intestines that resists all therapeutic efforts more stubbornly than nervous mucous colic." The indications are: (*a*) To evacuate the bowels by general laxatives; (*b*) to relieve pain without narcotics; (*c*) to prevent fermentation; (*d*) to counteract a possible autointoxication. To meet the first indication, olive oil or castor oil is recommended. To relieve pain, extract of cannabis indica, one-fourth grain in pill, three times daily. As an antifermentative, sodium phosphate, half a drachm daily. As disinfectants, salol, resorcin, and salicylate of bismuth are strongly recommended.

A LARYNGO-HYOIDECTOMY FOR CARCINOMA, WITH THE REPORT OF A CASE.

BY JACOB FRANK, M.D.,

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Although the first complete laryngectomy was done by Watson, of Edinburgh, in 1866, the operation really dates from its introduction by Billroth in 1873. The chief indication for complete or partial excision of the larynx has been carcinoma, although the literature shows a scattering of other malignant diseases, such as tuberculosis, sarcoma, etc.

The question of result, whether immediate or remote, can be best estimated from a hasty review of the statistics. Of the ninety-one cases of complete laryngectomy tabulated in the International Encyclopedia of Surgery, which includes all the cases reported between the years 1866 and 1884, the percentage of deaths as the result of the operation was sixty-five. Scheier reports sixty-seven cases in the *Deutsche Medicinische Wochenschrift*, 1888, with a percentage of deaths of 43. Eugene Krause, in the *Allgemeine Wiener Medicinische Zeitung*, Bd. 35, 1890, collected 160 cases of total laryngectomy, out of which 36 per cent succumbed to the operative procedure. Powers and White, in the *Medical Record*, 1895, add forty-eight cases, none of which had been reported by Krause. Of the forty-eight cases, 29 per cent died as the result of the operation. In concluding the statistics it should be added that about 10 per cent are free from recurrence three or more years after the operation.

The statistics, it is evident, show a decrease in the death ratio in total excisions from 65 per cent in the Ashhurst series, as against 29 per cent in the Powers and White. The decrease may lie in the fact of improved methods of operative procedure, and greater observance of antiseptic precautions, and it is fair to assume that early operation and a constantly improving technique will still further lessen the mortality.

The history of the case to be reported is as follows: A. E——, male, aged 39, occupation butcher, gave a negative family history. He denied venereal infection, and never used alcoholics or tobacco to excess. His general health up to nine and a half years had always been good. In February, 1890, he contracted pneumonia, and in June of the same year began to suffer from hoarseness and was unable to speak aloud. For this his family physician was called,

FIG. 1.—Five weeks after operation.

and treated patient for a "severe cold." Receiving no relief, a consultation was held and patient was advised to consult a throat specialist and undergo treatment, which he did. No benefit was derived, and patient decided to take the baths at Hot Springs, Arkansas. This was in 1891. He remained there five weeks, but being weakened by the baths returned home.

Having regained his voice, but speaking with difficulty, he again resumed his duties. Many home remedies were tried, believing that they might afford a cure, and after taking one of these

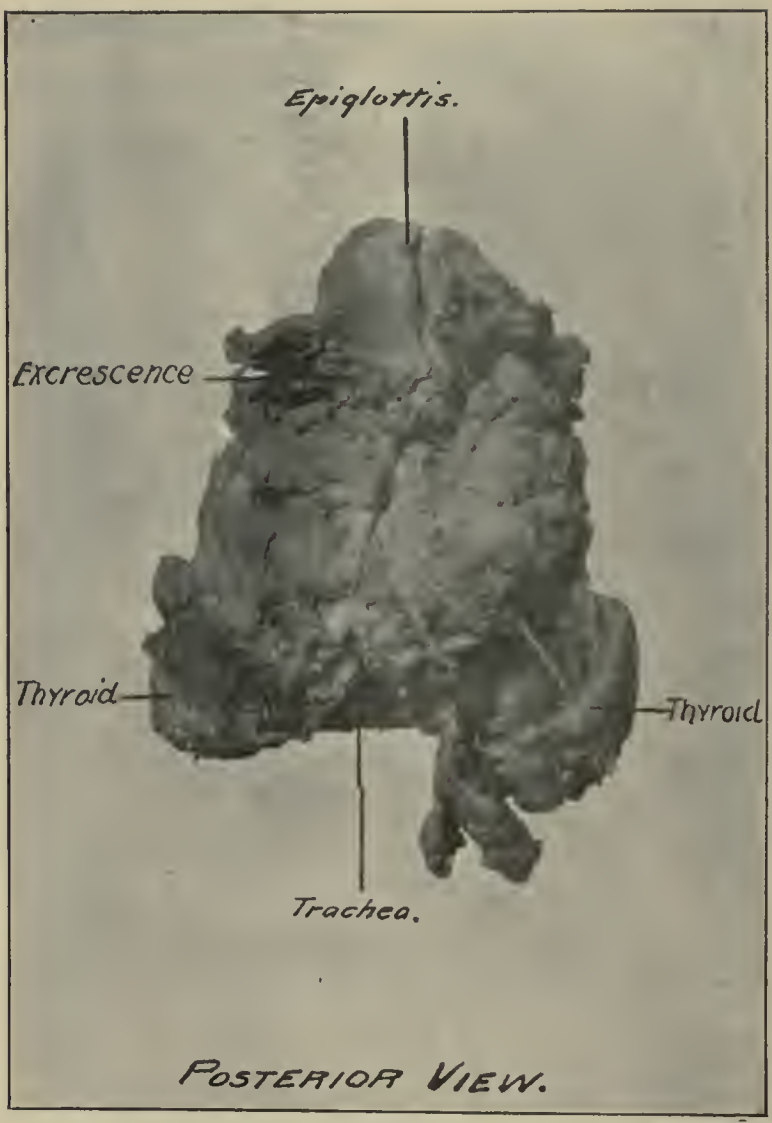

FIG. 2.

patient became very ill, remaining in bed for a week, necessitating attendance by his physician. Dr. Ingals, of this city, was now consulted, and advised an operation. Patient entered the Presbyterian Hospital, and on May 25, 1893, a low tracheotomy was performed. He remained in the hospital for eleven days. In Feb-

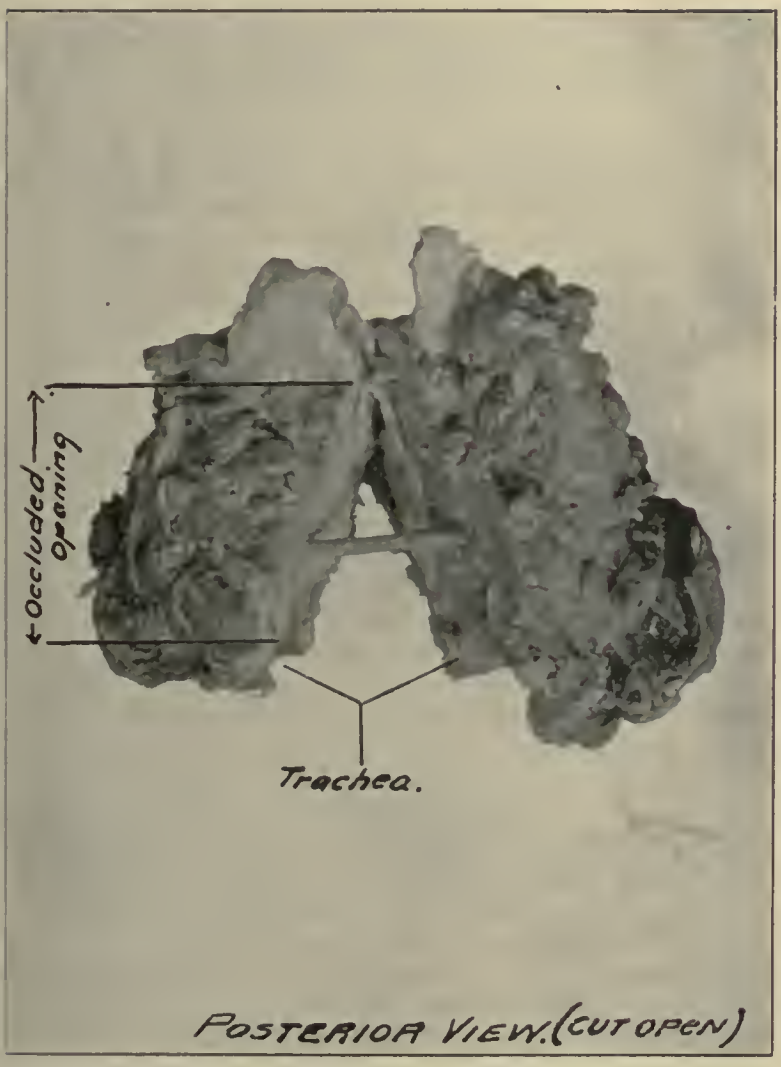

FIG. 3.

ruary, 1894, a cork was placed in the tube and patient allowed to breathe through his mouth and nose. At this time he could not speak above a whisper. The tube remained closed until July, 1894, when it was withdrawn and the edges of the tracheotomy opening freshened, and the wound allowed to close. In February, 1895, patient complained of severe pain in the lungs and experienced great difficulty in breathing. About this time he expectorated a

blood-stained, bitter, horrible-smelling mucus. Patient was compelled to take to his bed, and remained there for two weeks. Dr. Ingals was again consulted, and a diagnosis of tumor of the left lung was made. He suffered great difficulty in breathing until July, 1895, when tracheotomy was again performed. Although he suffered greatly from dyspnea, at no time did he become cyanotic.

The patient first came under my observation in the early part of 1897, when he came to my office complaining of stomach trouble, with the addition of his throat complication. Nothing worthy of note developed in his condition until February, 1899, when he came to me with a large swelling on the left side of his neck, which was very painful. It was treated locally for a time, and as no improvement was shown, an operation was advised and performed on June 26, 1899. A large mass was encountered, firmly matted to the large vessels and nerves of that side, necessitating a tedious dissection, and removal of part of the internal jugular vein. A pathological examination of the tissue removed was made, and a diagnosis given of tuberculosis. A rapid recurrence followed the operation, and on September 19, 1899, a large mass was again removed, involving the vessels and nerves of that region as before. On account of the rapid recurrence and the character of the growth, I felt a little skeptical as to the diagnosis of tuberculosis, and so sent a piece of tissue to Dr. Maximilian Herzog, pathologist to the Chicago Policlinic, who reported carcinoma. Unfortunately, the tissue from the first operation was lost and a comparison could not be made. Knowing the condition of affairs now, I advised laryngectomy, and on September 28, 1899, it was undertaken.

As tracheotomy was already done, all that was necessary was to substitute the Trendelenburg tampon cannula for the tracheotomy tube. To insure safety, a small strip of gauze was packed above the cannula. The patient was placed in the Trendelenburg position and the anesthetic administered by means of the Trendelenburg cone. An incision was made in the median line from a trifle above the hyoid bone to the tracheotomy opening, and a transverse incision at right angles to the median at its upper angle about three inches in length. This gave two triangular flaps, which were retracted. On exposing the larynx, the soft parts were bluntly dissected away, and all vessels encountered ligated. After the sides of the larynx were freed, the trachea was cut across and divided. Before separating the trachea from the esophagus, a hard-rubber stomach-tube was passed to serve as a guide. In separating the two it was necessary to remove a small portion of the esophagus at

its upper end on account of involvement. The opening was sutured, but unfortunately the sutures sloughed away, leaving a fistulous opening. As the epiglottis showed a small cauliflower-like excrescence at its base, it was removed, and the involvement about the hyoid bone necessitated its removal. Portions of the thyroid glands were taken away at the same time. On cut section the larynx was found to be completely occluded by the growth. The edges of the divided trachea were sutured to the lower angle of the wound, and the wound partially closed with interrupted sutures. A gauze drain was introduced opposite the sutured opening in the esophagus, and the operation completed.

Rectal feeding was resorted to for the first few days, and then patient took his nourishment through the stomach-tube. The gauze packing was changed every two hours from the third day following the operation, owing to the profuse flow of saliva. Both parotid glands became very much enlarged, and wet boric acid dressings were applied until the swelling disappeared. The highest temperature recorded was $101\frac{3}{5}^{\circ}$ per rectum. On the seventeenth day, under local anesthesia, a small gland was removed from the right side of the neck, and on the twentieth day several were taken from the left side, which showed a carcinomatous growth upon microscopical examination.

At the date of writing, December 12, 1899, patient is able to take solids and liquids by the mouth, but owing to the esophageal fistula a piece of gauze must be held against it to prevent escape of food. His speech is intelligible, but it is a hoarse monotone. So far the results have been very satisfactory, but owing to the likelihood of recurrence he will be kept under constant surveillance.

17 LINCOLN AVENUE.

A CASE OF OCULOMOTOR PARESIS FOLLOWING INDIRECT VIOLENCE.[1]

BY C. A. VEASEY, M.D., PHILADELPHIA,
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In the fall of 1897 A. F——, aged 30 years, while coasting down a steep hill on his bicycle, fell therefrom, striking his left temple and producing a slight bruise. He was somewhat stunned at the time but did not lose consciousness, nor did he have at that time or later any cerebral symptoms such as nausea or headache. After a short rest he was able to continue his ride, reaching his home an hour and a half later, but observing during his journey that objects occasionally looked, as he expressed it, "out of place." This was in the evening, and after reaching his home he at once went to bed. Upon waking the following morning he observed that the right upper lid was drooping, that when it was elevated he saw everything double, and that the eye was not in its proper position. Thinking the condition would disappear in a few days he consulted no one in regard to it for about a week, when he saw his family physician, who prescribed for him.

At the time of my examination, six weeks after the accident, the following condition was present:

There was considerable ptosis on the right side, which, however, was incomplete, as the patient could with some difficulty elevate the lid about half the usual distance. There was marked divergent strabismus. The eyeball would move outward as well as its fellow, and slightly downward and outward and slightly upward. The right pupil was somewhat larger than its fellow — 5 millimeters in diameter as compared with 3½ millimeters—and was sluggish in its reactions. The accommodation was impaired, though the patient assured me that until about ten days before my examination he was unable to distinguish any printed matter with that eye except of the large-sized type, such as is used in printing handbills. The diplopia was so annoying that he welcomed the ptosis to enable him to exclude the eye. The vision equaled 6–6, and there was no ophthalmoscopic change.

It would seem from the symptoms presented that there was a paresis of the right oculomotor nerve following an injury to the left temple, and affecting those muscles supplied by the inferior division of the nerve to a greater extent than those supplied by the superior

[1] Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, Jan. 16, 1900.

division, as some movement of the lid and of the superior rectus remained at the time of my first examination. Just what the actual lesion was it is of course impossible to determine, but it seems probable that the violence, though indirect, was sufficiently great to produce injury, probably a slight splintering of the bone in the immediate neighborhood of the entrance of the oculomotor into the orbital cavity, which caused greater injury to the inferior than to the superior division of the nerve. I am inclined to the belief that it was something more severe than an ordinary hemorrhage without fracture, as the case improved very little under active treatment.

A case of a somewhat similar nature has been recorded recently by M. L. Foster (*Archives of Ophthalmology*, 1897, page 361), who adds the abstract of another case previously reported by Noyes (Text-book of Diseases of the Eye, 2d edition, page 754). Foster's case was thrown violently to the ground from a wagon that had collided with a trolley car, and struck upon the left side of his body. He suffered great pain and was at once removed to a hospital, where it was discovered that he had a severe contusion over the region of the heart. There was no injury to the head and no cerebral symptoms of any kind. The patient consulted Dr. Foster some months later and stated that since the accident he had been unable to read for ten consecutive minutes without diplopia, and that it also appeared at times when he was tired or nervous. Examination showed paresis of the right externus. Vision was normal and there was no ophthalmoscopic change. The condition did not improve under treatment. The author thinks that the paresis was due to the accident, but considers a fracture of the orbital wall improbable and offers no further explanation of the condition.

The case recorded by Noyes was a physician, who was thrown from his horse, striking his left shoulder and the left side of his head. He was stunned but not unconscious. Subconjunctival ecchymoses appeared in both eyes. The following day he had diplopia and ptosis of the right eye. At the time of reporting the case the ptosis had practically disappeared, but the diplopia required for correction a ten-degree prism base up and a fifteen-degree prism base out over the right eye, and the optic disk appeared to be a little gray. The author thinks that the condition was brought about by a fracture of the orbital wall producing injury, not to the nerves themselves, but to the muscles at their origin in the apex.

In each of these cases there was an injury to one side of the body producing paresis of one or more of the muscles of the opposite side.

116 South 19th Street.

PREVENTION OF TUBERCULOSIS.[1]

BY CHARLES J. WHALEN, M.D., LL.B.

The confident hopes now entertained that tuberculosis can be exterminated, and the present active interest in the subject of its prevention, are facts of the times worthy of serious consideration. The idea that consumption is incurable is still very widely prevalent among the laity, but sufficient progress has been made in its treatment during the last few years to warrant us placing it in the category of curable diseases. The records of the post-mortem room teach us that at least 60 per cent of the patients dying from other diseases show evidences of spontaneous arrest or healing of the lungs affected with tuberculosis, and every practitioner can recall cases in which the disease has been for many years quiescent.

The idea is still prevalent that tuberculosis is a disease which is in the family, or a constitutional tendency which can only be accounted for by heredity, and against which it is useless to strive; but these ideas I am thankful to say are wrong, for science teaches that it is rarely hereditary—that is, in the sense in which medical men use the term heredity as applying to such troubles as rheumatism and insanity. Heredity of tuberculosis as now understood is simply the inheritance of a predisposition which renders the subject less resistant to the contagion of this disease. We now know that it is an infectious disease like measles, whooping-cough, and diphtheria, and that it is communicated directly from person to person while breathing the same air or sleeping in the same apartments with a person afflicted with the disease, who has been careless in some way, as in spitting on the floor, where it has become dried and dispersed as dust and inhaled by the healthy person. In this disease the germs are not only found in the apartments of the tuberculous, but they invade the schoolhouse and theater, the mansion of the rich, the tenement of the poor, the dens of iniquity, and the house of worship, and spare neither childhood nor age, the just nor the unjust.

The bacillus of tuberculosis is perhaps, of all pathogenic microbes, the most widely disseminated. We would naturally suppose that the tubercle bacilli being present in diseased lungs in millions would be carried out by the breath. But this is not the case, however; they are carried out in countless numbers in the expectoration, and it is by this means that the disease is transmitted. It

[1] Read before the Chicago Medical Society, Jan. 24, 1900.

has been estimated that a patient well advanced with tuberculosis will expectorate from three to six million bacilli in twenty-four hours. These facts have been known to the profession for nearly a score of years, yet it is only very recently that any one has raised a voice against the spread of phthisis. While this cruel disease that wreaks its slow, sad havoc among men cannot always be cured, it can be prevented, and although preventable it is steadily increasing, for in localities that in the past have never known the disease we find it to-day frequently originating. The total number of deaths from tuberculosis in Chicago for the year 1898 was 2416, and the average reported deaths from this disease annually for the past ten years was 2378, which was 11 per cent of the mortality from all causes. That such an annual sacrifice of life from this disease is unnecessary I firmly believe.

Phthisis causes more deaths annually than smallpox, scarlet fever, measles, diphtheria, typhoid fever, typhus fever, yellow fever, Asiatic cholera, leprosy, and whooping-cough combined (*Medical News*, Jan. 24, 1897).* The question at once arises, how are we to prevent inoculation of innocent people with tuberculosis? From every point of view the most hopeful outlook in combating it is by prevention, and to prevent it we must eliminate the bacillus. That we can eventually succeed is proven by the statistics from England, where the mortality in isolation hospitals for the tuberculous poor has been reduced 50 per cent in forty years; Philadelphia has reduced the mortality 20 per cent in eight years, and New York City 30 per cent in twelve years. We are all interested in the cure of this trouble, but if the present death-rate from consumption is to be materially lessened it is on prophylaxis that we have to rely as the only means for its eradication. The profession is at last coming to realize that the rational treatment of this disease is the hygienic treatment, and that if this measure was put into service, not only after the trouble has appeared but before the onset, in those burdened with bad heredity, we would soon begin to see progress toward the wiping out of consumption.

How many patients understand what it is to properly ventilate their homes during the day, not to mention the necessary ventilation at night? How many appreciate the health-giving powers of sunlight? In a city like ours, where too few have a real belief in the virtues of fresh air, what can we expect but that a large percentage of its inhabitants will sooner or later fall victims to this disease? All this can be changed if physicians as teachers of the public will do their duty by drilling into them the principles of pulmonary

hygiene. I have always been, and am still, in favor of those suffering from tuberculosis occupying separate sleeping rooms, and I believe it is the duty of the physician in attendance on a tuberculous patient to absolutely prohibit healthy persons from occupying the same room or bed with the afflicted. If the one already afflicted with the disease cannot be cured, it is possible to prevent others from being sacrificed. In families where there is inherited susceptibility to tuberculosis, the members should as far as possible follow outdoor occupations. Ventilation is to them of vital importance, and they should always sleep with a window open.

Now if tuberculosis is preventable, why is it not prevented? Prevention is always more satisfactory than cure, and the attempt more inspiring. By segregation and isolation leprosy has been practically banished from civilization; smallpox has been robbed of its terror; scarlet fever and diphtheria no longer reap their rich harvest in death; but tuberculosis with its multiform manifestations still claims one-fourth of all deaths for its own. The government annually spends millions of dollars to prevent the spread of cholera, yellow fever, and smallpox, and humanity shudders at the contemplation of these diseases, yet to the presence of tuberculosis there exists a spirit of apathy that is a reproach to our intelligence. "The instinct which prompts us to regard all men mortal but ourselves has doubtless its salutary influence, in that it conduces to a more placid endurance of the chances and changes of mortal life; on the other hand, however, it is likely to beget in us a carelessness in regard to the many available dangers of life, particularly when these dangers are ever with us, breathing an unwholesome contempt from our constant familiarity with them."

We are now arrived at the point which has been causing a great deal of annoyance to physicians and laymen alike, and upon which hinges partly the eradication of the disease, namely, is bovine tuberculosis communicable to the human subject? As the result of pathological investigations some doubt has been thrown on this plausible theory by various writers. From an examination of the post-mortem records of Paddington Green Children's Hospital, Dr. Leonard Guthrie shows that thoracic tuberculosis was most prominent and probably primary in 54.5 per cent of the cases, and abdominal phthisis in 24.5. Dr. Bovaird concludes from his experience in the autopsy room of the New York Foundling Hospital that the primary lesions of tuberculosis in children are regularly found in the bronchial lymph glands or in the lungs. The observations of Northrup at the same hospital are of special interest in connection

with the mode of infection. Of 125 cases of tuberculosis in children on the records of this institution, in thirty-four the ravages were extensive and the seat of the primary affection was not clear, the bronchial glands being found large and cheesy. In twenty cases of general tuberculosis there were cheesy masses in the bronchial glands and in the lungs. In forty-two cases of general tuberculosis the only cheesy masses were in the bronchial lymph glands; in nine cases tubercles were limited to the bronchial nodes and the lungs, the latter containing only discrete miliary bodies, while the bronchial glands were in advanced caseation; in thirteen cases there was tuberculosis of the bronchial nodes only.

Dr. William Osler (Principles and Practice of Medicine, 2d ed.), speaking of tuberculosis in children, says that recent studies have shown that it is a frequent affection in children under two years of age. He quotes the statistics of the late Professor Parrot as analyzed by Leroux, and embracing 219 cases in children under three years. Of these there were from one day to three months, 23; from three to six months, 25; from six to twelve months, 53 (a total of 111 under one year); and from one to three years, 108. Pulmonary cavities were present in 57 cases, and in only 50 was the pulmonary lesion the sole manifestation. After quoting the statistics given by Northrup, he says that these figures are very suggestive and point to infection through the bronchial passages as the most common method even in children.

Dr. L. Emmet Holt (Diseases of Infancy and Childhood, 1898) says much stress has been laid upon tuberculous milk as a means by which children are infected. He believes there is little pathological support to be found for the view that children often contract the disease in this way. In 119 autopsies performed by him upon tuberculous children, chiefly infants, there was not found one in which the most advanced and therefore presumably the primary lesion was in the intestine or stomach. He further says that in his own autopsies intestinal lesions have only been found in marked cases of generalized tuberculosis, being usually associated with an advanced pulmonary process. In 109 of his cases in which the condition of the intestine was noted, they were involved in 37 per cent. In 209 autopsies upon tubercular children, chiefly infants, reported by Miller, the intestines were involved in 28 per cent, and in 1346 autopsies collected by Bierdert there were intestinal lesions in 31.6 per cent. He says these figures show that the intestines are not the most frequent seat of tuberculosis in children.

In a recent report from Christiania, where a great number of

post-mortems were done on young, old, and middle-aged, and those dying from other diseases, in 75 per cent tubercle bacilli were found in the lymphatic glands at the root of the lungs. This is of considerable importance from a practical point of view, showing that the most frequent mode of invasion is through the respiratory tract. While much has been said of the dangers of infection from the milk supply, and there has been a tendency to assume that this is the usual mode of infection in early childhood, yet in only seven per cent of these cases dying during the first three years of life was tuberculosis found to be of intestinal origin.

Dr. Geo. F. Still (*British Medical Journal*, Aug. 19, 1899) in 769 necropsies in children under 12 years of age found tubercular lesions in 269, or in more than one-third. In this series of cases the intestines or peritoneum were found to be affected in 141, while pulmonary tuberculosis was present in 210 cases; and contrary to the accepted belief the writer states that by far the most frequent infection is by inhalation through the lungs, and that infection by way of the intestinal tract is less common in infancy than in later childhood.

Dr. Theo. Smith (*Journal of Experimental Medicine*, 1898, vols. iv and v), after his extensive experiments by inoculating animals with human and bovine tubercular bacilli, says that he believes that the tubercle parasite of man has, by its long existence in that host, acquired as it were an individual characteristic which unfits it for life in the ox, and that the microorganism of tubercle, which for centuries has had its habitation in the ox, has become practically specific to that class of animals. Dr. Smith arrives at these conclusions after observing the following points: First, that the human bacillus grows more vigorously from the start than does that of the bovine; secondly, that the length of the human bacillus is about two or three times that of the bovine in culture; and again by the physiological effects as shown by experiments, in which there was more rapid death of all guinea-pigs inoculated with bovine bacilli than in those inoculated with human bacilli. Experiments on rabbits confirm those on the guinea-pig. His experiments on cattle by the inoculation of bovine and human tubercle bacilli in some ten cases show slight local lesions at the point where the syringe was inserted when human bacilli were used, the disease not spreading. When bovine bacilli were introduced there was disseminated tuberculosis of the lungs, pericardium, and diaphragm, with extensive tuberculosis in nearly all the lymph glands of the thorax, and with slight deposit in the liver, spleen, and kidneys. These differences are so great that comment is unnecessary.

Dr. Edward Moore (*New York Medical Journal*, Sept. 9, 1899), a well known veterinarian of Albany, N. Y., questions the prevalent view as to the transmission of bovine tuberculosis to the human species. In all his experience with cattle tuberculosis he has never met with a case of its transmission to man. As regards the transmission of human tuberculosis to cattle, the case is equally strong. There is no instance that he can find where the infection of the disease in man has passed to the animal. He mentions the herd at the Saranac Lake Sanatorium, where there is so much infective material, and where the herd is exposed, if any could be, to infection, and yet it was found free from tuberculosis. He also cites letters from a great many veterinarians and other people whose positions permit them to speak with authority, and in every instance their views coincide with his. Dr. Moore's experience in many thousands of cases with bovine tuberculosis, and his investigations as well as his extensive inquiry, speak well for his thoroughness and acumen, and his article is worthy of careful perusal.

Professor Adami (*Pediatrics*) presents a similar view and points out that human tubercle bacilli when inoculated into cattle tend to become localized, while fowls may be fed on bacilli contained in human sputa with impunity.

In this connection L. Emmet Holt (Diseases in Infancy and Childhood) gives an illustration where near a large American city was a fancy stock farm of registered Jersey cows which supplied milk for table use and infant feeding to a large number of families in the wealthiest part of the city for a period of over ten years. At the end of that period the tuberculin test was used for the first time, and 45 per cent of these cows were found to be tuberculous and were killed by order of the State Board of Health. The diagnosis was confirmed by autopsies upon the animals in every instance. An investigation was instituted among the children who had been fed upon the milk, but in only one case of many hundreds could it be learned that tuberculosis had developed, and in this instance it was by no means established that the milk had been the source of infection. It should be stated that this was before the days of sterilized milk for infant feeding. Besides the families that took the milk in the case cited, the employees at the farm were accustomed to drinking the skimmed milk in large quantities daily as a beverage in place of water. Many of them continued to do this for years, and yet not one of them developed tuberculosis.

Now if the transmission of bovine tuberculosis is common or even possible, the farm where large numbers of infected cattle are kept should be the place where the disease would be most observed,

for here every opportunity for the acquirement of the disease ought to exist according to the accepted notion, because nowhere else is there so much infected material and nowhere else are the people so exposed to the danger if any exists; yet on a personal inquiry at over forty dairy farms in New York, Illinois, and Wisconsin, I was told by the proprietor in each place, who was personally acquainted with many hundred people engaged in dairying in his respective locality, that he could not recall a single case of tuberculosis originating in his community, yet many members of each family as well as the dairy hands were in the habit of drinking large quantities of milk daily. Again, on inquiry of eighteen country physicians who practiced in dairy districts, and whose experience we must consider of practical value, all were agreed that intestinal tuberculosis is extremely rare, some even claiming that it is almost unknown in the country. While intestinal lesions are sometimes found in children, instances of primary tubercular intestinal lesions are not very common, and in many cases where they do occur I believe them to be due to secondary infection of the intestinal glands from the swallowing of tubercular sputa. While infection from milk may be possible, I believe it to be extremely infrequent, and that the chief means of communicating the disease even in childhood is by direct infection by inspired air. Numerous examples might be mentioned where children have contracted the disease from close exposure to persons in the household, but more often we are unable to trace the infection, because exposure long antedates the development of symptoms. I believe that the few bacilli taken into the stomach with meat and milk are mostly destroyed in the act of digestion, and therefore we are in little danger of infection from bovine tuberculosis. I also believe that this great wave now sweeping over this country, which has for its object the destruction of all tubercular milch cows in the world, was born of the grossest misapprehension of the real facts; and however much we might desire the examination and condemnation of infected herds of dairy cattle, it certainly would be putting the cart before the horse to demand their wholesale destruction while the greater danger is left behind. Whether or not you accept these statistics together with the experiments of Dr. Smith as conclusive, they do show that our greatest danger is not from tubercular meat and milk, but that the greatest source of contamination is from ourselves.

The best means of prevention would be the destruction of the sputum and the removal of those affected who are too poor to receive the necessary care at home to an isolation hospital, which

should be provided by the State. Again, I believe that much could be accomplished if the board of health of each municipality would furnish tubercular families, when requested to do so by the attending physician, such educational matter as should be known by them in order to thoroughly protect themselves from contamination. The health authorities, too, should also be compelled to disinfect the apartments occupied by tubercular patients when requested to do so by the physician in charge. Again, great good could be accomplished by systematic education of the people in the fundamental principles of hygiene.

No one can feel more than myself the importance of teaching patients and their friends the paramount necessity of perfect cleanliness about the phthisical patient and the careful disposal of the sputum. This can be wisely and kindly done, as a rule, without causing the spirit of terror which would result from the enforcement of laws which make spitting on the floors in public places a misdemeanor and punishable by fine. While I welcome the new crusade against tuberculosis, I do not believe it would be judicious at the present time to make the registration of this disease compulsory, for inspection and disinfection can be safely carried out without working such a severe hardship to those unfortunates, for too rigorous or inhuman restrictions might only undo the work already done or bring it into disrepute. But we should take such precautions as are absolutely necessary.

In large cities where people are obliged to take out a death certificate no notification should be necessary, for the health department should disinfect, or see that the house in which a tubercular patient lived and died is disinfected. There should also be conspicuously displayed in all public places and conveyances placards telling people the danger of spitting where it may become dried and dispersed as dust. By this systematic education we could soon convince the laity that tuberculosis is a contagious and preventable disease, and in a short time we would have the support of our most intellectual citizens; and when this is accomplished we will be able to reduce the death-rate 25 per cent in five years.

Now that we know that the eradication of the disease practically resolves itself into the destruction of the sputa, the importance of showing the sufferers themselves the necessity of adopting and faithfully carrying out the necessary precautions will be readily seen. Convenient receptacles for expectoration have been devised, and one of these the patient should carry around and religiously make use of, or in the absence of a special receptacle cheese-cloth in a

small tin box should be carried by every tubercular patient, the contents of which should be frequently destroyed by fire or strong antiseptic solution. Among intelligent people there is little to overcome in this direction; they need but to be told that this destroyer is capable of control, that to accomplish this it is only necessary to destroy the virus contained in the discharge of the diseased organs, and that in a careful observation of a sanitary regulation they are not only protecting those who are obliged to care for them, but they are making their own cure the more possible. But with the unintelligent and poor the task is by no means an easy one, because of the greater difficulty in educating them. It is this class that the State should provide for by means of isolation hospitals, where those who cannot be properly cared for at home can be sent. It is gratifying to know that our own State of Illinois is taking advanced grounds on this subject. This view has also been gaining in favor of late in other States in this country, as well as abroad. France, Belgium, and some other foreign countries have provided sanatoria for the treatment of tubercular children. They are also provided with a school, so that the children not only have a chance to be cured, but at the same time receive an education. The poor adult consumptive, too, needs the protection and care of the State; and every municipality should have a sanatorium, where those dependents who are afflicted with tuberculosis could receive the necessary attention so as to at least make the remainder of their lives pleasant, for if we are in earnest to eradicate this disease from man we must take upon ourselves the care and treatment of the curable and incurable poor, as these tubercular patients should not be received in general hospitals or dispensaries. The establishment of isolation hospitals for the consumptive poor would be the very best step that we could take for the prevention of the disease, for not only would a large number of the patients be cured, but it would put a stop to the enormous amount of infection which is now being spread broadcast by the sufferers. While it is not only the duty I believe it would be to the interest of the State to provide institutions for the consumptive poor. Isolation hospitals are not to be advised for the well-to-do, who can afford to and will carry out the necessary instructions at home, for it must be admitted that the presence of so many invalids in all stages of the disease must have a depressing influence. A good trained nurse and good control of the patient at home will be found to be more efficacious and more satisfactory to the patient than isolation at a sanatorium.

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A CASE OF ULCERATIVE ENDOCARDITIS, WITH ANEURISM OF A SINUS OF VALSALVA; AND A CASE SIMULATING ULCERATIVE ENDOCARDITIS.[1]

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I. *Ulcerative Endocarditis—Aneurism of a Sinus of Valsalva—Obliterating Pericarditis.*

A. D——, a laborer, 43 years old, was admitted to the Philadelphia Hospital on March 23, 1899, complaining of precordial oppression and dyspnea. He related that for seven weeks he had not felt as strong as before, and he seemed to get out of breath with undue readiness, being compelled for two weeks to stop and rest after walking a short distance. There was also palpitation of the heart. The patient was pale, although he appeared fairly well nourished. The pulse was full and strong, but somewhat accelerated. The apex beat of the heart was visible in the fifth and sixth intercostal spaces to the left outside the mammillary line. In this situation a slight thrill could be felt, and in the aortic area a coarser thrill. The area of cardiac percussion dulness was much increased, especially toward the left. Systolic and diastolic murmurs were audible in the fifth, sixth, and seventh interoostal spaces in the anterior axillary line on the left and also in the aortic area, that which appeared to be systolic being loud and sawing in character. On July 6 the impulse of the heart was noted as heaving, with a dull first sound at the apex, together with a rough systolic murmur, while at the aortic cartilage was heard a rough systolic murmur, with an absence of the second sound, and at the ensiform cartilage a dull first sound followed by a rough murmur. The temperature for the most part pursued a somewhat irregular subfebrile course, with slight acceleration of pulse and of respiration. The patient improved somewhat for a time, but his condition subsequently grew progressively worse, and he died July 9, 1899. Toward the close of his illness he had recurrent cold sweats and delirium, and these in conjunction with the now erratic temperature led to a suspicion of ulcerative endocarditis. Examination of the urine disclosed no abnormality; and other than an attack of rheumatism

[1] Read before the Pathological Society of Philadelphia, Sept. 28, 1899.

confining the patient to bed for some time the history presented nothing noteworthy.

Upon post-mortem examination the pericardial cavity was found entirely obliterated by adhesions. The heart was enlarged and its cavities dilated. The right auricle was filled with currant-jelly clot and the right auricle with chicken-fat and currant-jelly clot. Opposite the tricuspid orifice and below the auricle the septum between the ventricles bulged over an area about one centimeter in diameter into the cavity of the right ventricle, and in the pouch thus formed was found an orifice of communication between the ventricles. The cavity was found to represent an aneurism of a sinus of Valsalva. At a lower level a few small fibrinous coagula adhered to the interventricular septum. The mitral leaflets were large and thickened. On the ventricular aspect of one was a rough, uneven ulcer of dark-gray color, about two centimeters in diameter. The interior of the left ventricle presented a mottled appearance. The papillary muscles were well developed. Two of the aortic leaflets were extensively calcareous, while the third presented in addition fresh vegetations. The aorta itself was the seat of beginning atheromatous changes. The kidneys were congested and cyanotic, the liver red and atrophic. The spleen contained an infarct, probably recent. The pleuræ were thickened and adherent, while the lungs, which were congested and edematous, presented healed tubercles.

II. *Valvular Heart Disease, Hemorrhagic Purpura, Gangrenous Stomatitis; Simulating Ulcerative Endocarditis.*

M. C——, a teamster, 42 years old, was admitted to the Philadelphia Hospital on July 14, 1899, complaining of dyspnea and pain in the chest. The man had been a heavy drinker all his life. He had had an attack of gonorrhea nine months previously, but he denied syphilitic infection. He related that for eight months he had suffered from a dry, paroxysmal cough. For four weeks there had been dyspnea and pain in the chest, which had become much increased in the last few days. There had previously been periodic attacks of acute pain in the precordium, radiating to the left shoulder, and down the arm to the fingers. Each attack lasted about five or ten minutes and passed away as suddenly as it set in. The pulse was of good tension, and the arteries felt somewhat atheromatous. On auscultation a blowing systolic murmur was heard at the apex of the heart, transmitted to the left axilla and the angle of the scapula. The lungs exhibited signs of slight emphysema. In the sputum streptococci and staphylococci were found in abundance,

but no tubercle bacilli. The urine contained a trace of albumin and a few hyaline casts. After the lapse of a week the walls of the chest were found edematous, and the area of hepatic percussion dulness extended three finger-breadths below the costal margin. The patient was now slightly icteric. The area of cardiac percussion dulness was increased to the right, and a systolic murmur was heard over the whole precordium, at the ensiform cartilage exhibiting a double character. Dyspnea had become marked at times, and there was a painful external hemorrhoid. After the lapse of another week the double aortic murmur was well marked. Jaundice persisted; distress had increased; and a cachectic appearance had set in. On August 7 it was noted that the cachexia had increased. A petechial eruption had developed, being most marked upon the trunk. A gangrenous ulcer about an inch in diameter formed in the right cheek, from which a fetid, bloody discharge took place. On examination of the blood the hemoglobin percentage was found to be 50, the number of red corpuscles 3,170,000, the number of white 14,000 per cubic millimeter. The patient now became delirious, while the oozing of blood from the mouth continued, and the purpuric eruption increased. Under treatment with carbolic acid locally the ulcer healed. The patient, however, grew progressively worse, with persistent hemorrhage, until death took place on August 11. The temperature throughout was normal, or below.

On post-mortem examination, made by Dr. T. S. Kirkbride, Jr., the body was found much emaciated, the skin of the face yellowish-brown, and the conjunctivæ icteric. On the shoulders and arms were numerous spots varying in tint from a reddish-brown to a blue color, and in size from a pin-head to a diameter of one or two millimeters. The peritoneal cavity contained an excess of fluid, but the serous membrane was everywhere smooth and glistening. The pleural cavites were free from fluid. Firm adhesions were present at the right apex and base. The pericardial cavity contained seventy cubic centimeters of clear yellow fluid. The aortic leaflets were much thickened, the atheromatous process continuing from the aorta upon the valve. The line of closure of the mitral valve was thick and fibrous, and the tendinous cords likewise were thickened. A band of muscular tissue extended from the left wall of the ventricle to about the middle of the septum. Small hemorrhages were present beneath the pleura covering the lungs. The lungs themselves were increased in volume, soft in consistency, and on section exhibiting numerous spots of dark-red color. The spleen was slightly enlarged and its capsule somewhat thickened, especially

at the center of the convexity. Its consistency was normal, and its cut surface brownish-red in color. The trabeculæ were distinct and the pulp was not increased. The kidneys presented evidences of fatty degeneration. The colon contained a considerable amount of dark, tar-like material. The solitary follicles appeared as pin-head-like spots. They were slightly elevated, with beginning ulceration in some. The mucous membrane of the ileum was swollen and traversed by bright-red lines following the course of the vessel. The solitary follicle and Peyer's patches were slightly swollen. The brain was moderately edematous on its convexity, and the intraventricular fluid was somewhat increased. The liver was yellowish-brown in color, its capsule wrinkled. On section it appeared yellow, in most pronounced degree in bands surrounding the lobules.

These two cases present several points of interest. In the first a diagnosis of ulcerative endocarditis appeared probable from the symptoms and the clinical course, and it was confirmed by the results of post-mortem examination. In the second, which was under observation for a portion of the same time as the first, the possibility of ulcerative endocarditis seriously arose on account of the pronounced constitutional symptoms, the gradual augmentation of the cardiac phenomena, and more especially the petechial eruption, the gangrenous stomatitis, and the hemorrhage from the mucous membrane of the mouth. Against this, however, was the absence of chills, and especially of elevation of temperature. The case, therefore, appears to have been one of extensive atheroma, involving both the aorta and the endocardium of the left side of the heart, complicated by hemorrhagic purpura and gangrenous stomatitis. The thought arises whether, perhaps, the extensive atheroma or the aorta bore any relation to the purpuric condition. With our present knowledge purpura must be looked upon as a symptomatic manifestation indicative of a depraved state of the blood or of a degenerate state of the blood-vessels, or of both together. It seems not impossible that the diseased vessels in this case might at least have predisposed to the blood condition that resulted in the petechial hemorrhages. Whether microorganisms play an exciting part in the etiology of purpura is as yet an unsettled question.

BOOK REVIEWS.

A Practical Treatise on Materia Medica and Therapeutics. By Roberts Bartholow, M.A., M.D., LL.D. Tenth Edition, Revised and Enlarged. New York: D. Appleton & Co. 1899.

The first edition of Bartholow's Therapeutics appeared in 1876 and at once sprang into popularity. That which commended the early work to the profession was its copiousness of therapeutic research and its dogmatism. But little doubt could be found in Bartholow of the value of drugs. The indications that were laid down were clear and concise, and we were left in no doubt as to the remedies to employ in meeting certain indications.

Those acquainted with the older work will find in the present one much that is familiar. The same schema is employed, which to us has always seemed one of the most rational classifications of drugs which has ever been devised. It is simple, the main divisions being systemic and topical remedies. The first division is divided into reconstructives, alteratives, and antiseptics, and those used to modify the functions of organs, the latter being divided into those which work on the nervous system, the gastrointestinal canal, and the genito-urinary organs. Such a classifications is simple and aids the student in retaining the main facts regarding drugs and their action; at the same time it is not so elaborate as to burden the memory and to sink a knowledge of the action and uses of drugs into a mere comprehension of classification. This last edition of Bartholow's is abreast of advancing science.

There is an excellent but short article on transfusion. Few will agree with him that cocaine is for most purposes superior to eucaine as a local anesthetic. There is a short chapter on prescription writing, which will be found useful for students.

The first of part two is devoted to aliments, and includes a discussion of foods and beverages especially adapted for the sick. Then follows a short chapter on hydrotherapy. Heat is considered, but there is no mention of superheated air as a therapeutic agent. Among the general remedies massage is mentioned and the general range of its application. The author says: "Massage has its ill effects, and is now, like the rest cure, much overdone. Besides the expense and inconvenience of the treatment, it is used injudiciously in cases of debility and in convalescence." In discussing digestive ferments, the range of their application, particularly pepsin, is carefully limited. We are told that it is indicated in stomach disorders characterized by a deficiency of this essential principle, and it may be given when it is suspected that such a condition exists. This condition is often found in cancer, diabetes, typhoid fever, and heart disease. The writer calls attention to an important fact, often overlooked in feeding children, of frequently adding pepsin to their food with great benefit, when it is artificially prepared.

It is regrettable that the term "carbolic acid" is so persistent in the literature. The proper chemical name for the substance, "phenol," is omitted, though the French and German equivalents are given. Nothing but prolonged custom justifies the use of this word; it is derived from *carbo*=coal, and *oleum*=oil. It is not an oil, though it is derived from coal—one of the products of the destructive distillation of coal oil. It is not an acid.

In the chapter on animal extracts mention is made of Brown-Sequard's experiments in the use of the thyroid body. This latter is spoken of in the treatment of obesity, as follows: "Thyroid has been used with success. It is almost the only remedy for this condition acting in a direct manner. It has the power of reducing the body weight without any modification of diet or change in the manner of living. It must be given with caution that the loss of flesh may not proceed too rapidly, and that cardiac depression may be avoided." The above has a refreshing certainty after the contradictory and confusing reports one finds in current medical literature regarding the use of thyroids in this condition.

One of the longest chapters in the book is devoted to a consideration of electricity and its various applications. The newer silver preparations are adequately considered, but the striking effect of suprarenal extract upon the blood-vessels is not mentioned, and there is no description of the use of gelatin solutions in the control of hemorrhage.

NOTES ON THE TREATMENT OF FRACTURES. By John B. Roberts, A.M., M.D. Price, $1.50. New York: D. Appleton & Co. 1899.

This is a small monograph of 162 pages, which sets forth the modern treatment of fractures. That there is considerable shifting from the old line is apparent from the opening paragraph of the book. Complete reduction, exact restitution of contour, and perfect retention, we are told, are the conditions of full success in the treatment of fractures. Deformity, impairment of articular movements, non-union, and neuralgic pains are remote results of failure to obtain these desirable conditions. The advances of aseptic surgery make it possible to secure perfect results by the open method. The application of skiagraphy has proved that fractures seemingly well reduced and properly dressed may be the seat of considerable deviation. The author is confirmed in his belief, expressed more than fifteen years ago, that the exposure of fracture in a certain limited number of cases is a most important procedure. He would, however, limit these to cases where ignorance of the exact lesion exists, and where it is impossible to secure perfect reduction. The slight risk from an aseptic incision should not be incurred unless it is necessary.

Subcutaneous nailing of fractures, where there is unusual tendency toward displacement, is regarded as a valuable agent in dealing with broken bones. The method is stated to be effective and simple in its technique. Subcutaneous tenotomy is commended as an aid in the reduction of fractures. If this method were extended there would be a lessening of the deformities following fractures. This is especially true of the tibia and fibula. Of especial value is it in tibial fractures where there is a tendency to override; here a division of the tendo Achilles will secure such perfect reduction and coaptation that it will always be resorted to in subsequent cases.

False doctrines in the treatment of fractures are said to be the prevalent idea that special splints or apparatus are necessary. Simple devices are always the best and usually solve the mechanical problems presented by the most complicated fracture. The roll bandage next to the skin is condemned. Callus is not essential to the proper union of fractures, and this is never considerable in amount where perfect immobilization is secured. One of the most difficult questions in treating fractures is to know when to begin passive motion. This should not begin too early. If the fracture extends into the joint, early passive

movement will increase the amount of callus and inflammation; hence the impairment of function. If the fracture does not involve the joint, then, unless there has been severe inflammation in the joint, the degree of ankylosis will be very slight. Massage and passive motion are useful in nearly all cases, and they may be instituted immediately after the fracture is set, providing they do not cause pain. The latter is an evidence that the treatment is of no benefit.

Plaster of Paris for splints is a great favorite with the author. He says that it is by all odds the best material for molded splints. Gutta-percha, wool, and other substances are no better, meet the same indications, and are less easily obtained and more expensive. The article on fractures of the cranium repeats much that the author said in a monograph published some years ago. In a general way it emphasizes the necessity of incision and careful exploration if there are brain symptoms or evidences of depression. In the treatment of Colles' fracture, perfect reduction is to be secured, but no splints should be used. The only exception to this is in nervous patients or children in whom the danger of displacement of the fragments is very great. In the great majority of cases all the support which is required is one or two layers of adhesive plaster. This permits of the hand being pronated and supinated and prevents adhesions of tendons in their sheaths. Ambulant splints are described, but no great stress is laid upon this best of all modern methods of treating fractures.

LECTURES UPON THE PRINCIPLES OF SURGERY. Delivered at the University of Michigan by Charles B. Nancrede, A.M., M.D., LL.D. With an Appendix Containing the Principal Views Held Concerning Inflammation, by William A. Spitzley, A.B., M.D. Price, $2.00. Philadelphia: W. B. Saunders. 1899.

This is a small work of 398 pages, dealing, as its title indicates, only with the principles of surgery which we are taught "are those laws formulated from the combined results of experience and experiments which when applied to special cases are found to explain the phenomena of disease and indicate the general measures best calculated to combat morbid conditions." We are told that specialism in the teaching of medical science has provided for specific instruction in pathological and bacteriological branches; anything beyond a mere reference to peculiarities of form and growth of germs, or the changes during diverse pathological processes, would be, therefore, a useless repetition in a work of this character. Unlike works upon the principles of surery, the author does not begin the consideration of the topic with inflammation, as he does not regard this as a necessary process occuring during the repair of injuries. There is only one process of repair, which, when progressing undisturbed, has been improperly termed "aseptic inflammation." When microbic invasion has been successful, certain modifications of the processes of repair occur; these are inflammatory and essentially destructive. Whatever these disturbances are, when removed the original reparation process is promptly resumed. "Hence, there is no longer room for such terms as aseptic and infective inflammation, but only for repair and inflammation, because the latter is always due to the action of germs or their products." Hyperemia and congestion are not considered antecedents of inflammation, but merely predisposing causes. The different forms of hyperemia and their

results are described, among these being gangrene. Hypertrophy, hyperplasia, atrophy, and exudates are considered. The process of repair of wounds is described, together with the regeneration of tissues. Lectures V to X inclusive are devoted to a study of inflammation and its treatment, the first setting forth the writer's reasons for regarding this process as always due to microbes.

The changes of the blood, in so far as they are related to surgical conditions, are adequately considered. Pyemia is said to be a misnomer, as liquefied thrombi have been mistaken for collections of pus. In rare instances infective thrombi have been found in the capillaries, due to a rupture of an abscess into a vein. Autointoxication is considered at length, with the various forms of gangrene and ulceration. Then follow the surgical complications of erysipelas, tetanus, hydrophobia, anthrax, glanders, and tuberculosis. Hemorrhage is discussed with its treatment. Naturally, sterilization, antiseptic surgery, and drainage, as well as the treatment of wounds and shocks, receive extended discussion. With the exception of the appendix, dealing with inflammation, the work closes with an account of anesthesia and anesthetics.

SURGICAL ANATOMY. A Treatise on Human Anatomy in its Application to the Practice of Medicine. By John B. Deaver, M.D. In Three Volumes. Vol. I. Philadelphia: P. Blakiston's Son & Company. 1899.

The work of Deaver, we are informed, has been twelve years in preparation. The time spent in preparing the work is certainly not long when we consider the extent of ground covered. The first volume contains 632 pages, and deals with the surgical anatomy of the upper extremities, back of neck, shoulder, trunk, cranium, scalp, and face. It contains 151 magnificent half-tone plates, which are striking examples of the perfection of modern illustration. They are all printed with tinted backgrounds, and the details of anatomical structure are brought out with striking fidelity. We do not overpraise the work when we say that it is the handsomest that has been issued from the medical press of this country for many years. It is a revelation in half-tone illustration and shows the practical superiority of this style of work, when well done, over colored or lithographed reproductions. Nothing could improve these plates unless they were done upon steel, and this would lend them only a trifling additional artistic appearance, without improving their usefulness in the slightest degree. The completed work will be composed of three volumes, the total number of plates being over four hundred. It is not a work upon anatomy nor upon surgery, but is designed to bridge the space separating these subjects. It is the application of practical anatomy to surgery which is considered. This subject, which has been a growing one of late years, has been considered by numerous writers, and excellent works have been prepared. None, however, equal the extent of this one, nor are they so well illustrated.

The work is printed upon extra heavy paper and sumptuously bound in Russia leather.

BACTERIOLOGY IN MEDICINE AND SURGERY. By William Hallock Park, M.D., and A. R. Guerard, M.D. New York and Philadelphia: Lea Bros. & Co. 1899.

This small work is designed as a practical manual for health officers and students. It is not a mere technical description of bacteria and their methods of study, but only such laboratory technique is given as is essential to make the

subject plain. The practical side is emphasized, and a special effort has been made to make it valuable to physicians in such simple examinations and studies as may be made in the office.

The work opens with a historical introduction. The foundation of modern bacteriology, so far as it relates to the study of infectious diseases, is credited to Koch, and the date is placed at 1881. The general characters of bacteria are described, with their chemical composition and the conditions suitable for their growth. Their vital phenomena are considered, such as heat, motion, and light production, as well as the chemical effects. The chapter that will be of most interest to physicians is that dealing with the relation of bacteria to disease, which is followed by a discussion of immunity, the theories of infection, and recovery. There are short chapters dealing with disinfection and sterilization, which of necessity include the action of various mechanical and chemical means upon microorganisms; also a discussion of the influence which one species has upon the growth of another. The remaining portion of the work is taken up with an account of the properties, staining, and microscopical examination of bacteria, and a study of the individual bacteria.

The work closes with a short index of infectious diseases in which bacteria are found. The volume is of medium size, contains 693 pages, and is well issued. It forms an excellent addition to the recent literature of bacteriology.

PROGRESSIVE MEDICINE. A Quarterly Digest of Discoveries, Advances, and Improvements in the Medical and Surgical Science. Edited by Hobart Amory Hare, M.D. Volume IV, December, 1899. Philadelphia and New York: Lea Brothers & Co.

Volume IV is the last number of the year 1899. Each three months a volume is offered, of about 400 pages, the three preceding ones having been reviewed in MEDICINE. The current number deals with diseases of the digestive tract and allied organs, the liver, pancreas, and peritoneum, by Charles G. Stockton; genito-urinary diseases in the male, and syphilis, by William T. Belfield; fractures, dislocations, amputations, surgery of the extremities, and orthopedics, by Joseph C. Bloodgood; diseases of the kidneys, by John Rose Bradford; physiology, by Albert P. Brubaker; anatomy, by Fred H. Gerrish; hygiene, by Henry G. Baker; and a practical therapeutic referendum by E. Q. Thornton.

Progressive Medicine is a difficult publication to classify. It is not a series of monographs; strictly speaking, it is not a periodical. It aims to present, and does present, a critical summary of the recent literature in the department of which it appears, but it can hardly be classed as a year-book in the sense in which that term is commonly used. It by no means claims to give an index of current medical literature, but an examination of its pages shows that almost nothing of importance has escaped mention. Each of the articles is a critical study of the development of the different subjects by an acknowledged master in that department. The writer culls for us from current literature what he regards as important, setting it down under proper headings. One writer in the current volume devotes the entire space at his disposal to a discussion of anatomical nomenclature. There are in this one only occasional references to recent literature.

The arrangement of the work is simple and corresponds with that commonly followed in medical literature. The subheadings are in heavy type, and

the references to journals from which articles are taken are put in foot-notes marked by numbers. This avoids the irritating systems which have sometimes been followed in the preparation of such books, and which must be memorized before they can be used with satisfaction. All difficulty of reference is avoided in this volume by an adequate index, constructed upon the same plans as those employed in the average medical book.

A Text-book of Materia Medica, Therapeutics, and Pharmacology. By George Frank Butler, Ph.D., M.D. Third Edition. Price, $4.00. Philadelphia: W. B. Saunders. 1899.

The work of Dr. Butler has been exhaustively reviewed in these pages, and therefore it is only necessary to refer to the fact that a third edition has been called for within three years of the publication of the first. This is sufficient to show that the work has been popular, and one which has been particularly helpful to the practicing physician and the student of medicine. An examination of its pages shows the reason for such popularity. It is found in a conciseness of description, excellent arrangement, a simple classification, and adequate index. The latter is especially valuable, as it is divided into two parts—a clinical index and a general index. We note no differences calling for extended comment between the second and third edition.

Essentials of Diseases of the Skin. By Henry W. Stelwagon, M.D. Fourth Edition, Thoroughly Revised. Price, $1.00. Philadelphia: W. B. Saunders. 1899.

This volume is No. 11 of Saunders's Question Compends, and has been proven to be quite as popular as any of the series. There is but little change from previous editions. It, like others of the series, is in the form of questions and answers, a method which from the student's standpoint is always valuable. The illustrations in this volume are for the most part very poor. The plate facing page 198, labeled lupus vulgaris, could as well be labeled a hairy mole as anything else. A few of the illustrations which are diagrammatic are of value, but those dealing with the appearances of diseases of the skin, excepting as they merely show the distribution of the lesions, are of little help.

Histology and Pathology. A Manual for Students and Practitioners. By John B. Nichols, M.D., and Frank P. Vale, M.D. Price, $1.75. New York and Philadelphia: Lea Brothers & Co. 1899.

This forms one of Lea's series of pocket text-books. It follows a recent arrangement by which histology and pathology are included in the same volume. It does not aim to be in any way original, but is an excellent brief statement of both subjects. The pathological part is written by Vale, and that dealing with normal histology by Nichols.

Essentials of Medical Chemistry, Organic and Inorganic. By Henry W. Stelwagon, M.D. Fourth Edition, Thoroughly Revised. Price, $1.00. Philadelphia: W. B. Saunders. 1899.

This small volume forms No. 4 of Saunders's Question Compends. It is devoted to medical physics, chemical philosophy, analytical processes, toxicology, etc. It is prepared in accordance with the well known formula of questions and answers.

EDITORIAL COMMENT.

A MILK DIET IN TYPHOID FEVER.

The accepted diet for this disease is milk. As soon as the diagnosis is made, the majority of practitioners exclude everything but milk, and it is continued until the fever has disappeared. In this use of a milk diet in typhoid fever the traditions of the profession are faithfully followed. It is a treatment that was instituted soon after Louis differentiated typhoid from other forms of continued fever and showed the almost universal involvement of Peyer's patches. It would be impossible at this time to state who originated the strict milk diet, but the theory upon which it is based is certainly simple. The complications which are dreaded in this disease are ulceration with perforation and hemorrhage. It was thought that by excluding solid food from the diet the intestinal contents would be liquid and unirritating; consequently the danger of these complications would be reduced to a minimum.

A careful study of the statistics of typhoid fever shows but little change in the frequency of complications, no matter what diet or treatment is employed.

If we examine into the theoretical conditions which have urged an exclusive milk diet in the feeding of typhoid patients, we learn that it rests purely upon an *a priori* basis. It is assumed that a diet which is entirely liquid would cause less irritation of ulcerated surfaces in the intestines than one which contained some solid food. No one has ever experimentally shown that this is a fact, nor is it possible to prove by statistics that perforation and hemorrhage are less frequent in those patients who are kept on a strictly milk diet.

So far has this dogma of milk feeding in typhoid fever been accepted that many physicians recoil from the very thought of administering other foods; even eggs are excluded by many as belonging in the class of solid foods. In this unreasoning adherence to a milk diet we think many practitioners fail to recognize that milk, while taken in the mouth as a fluid, is soon converted into a solid in the stomach. Unless lime-water is added or the milk thoroughly diluted, or a mixture of milk and cream is employed, the proportion of casein is sufficient when coagulated to form a mass in the stomach which from a physical standpoint is quite as much solid food as is coagulated egg albumen or lean meat.

In the foregoing we are not urging that milk should not be given to typhoid patients, as it is one of the best foods for sick people. It contains all the constituents necessary for the normal nutrition in about their proper proportions, and it is easily obtained in comparative purity. As a food for sick people it has many striking advantages, but we would take issue with a view that insists that typhoid fever patients must be fed on milk, and to an argument that would refer the complications, such as relapses and hemorrhage, to diet, in cases where the strict milk diet has not been adhered to. There are many patients who do not like milk and with whom it is not easily digested. Even those who take it readily and at first seem to enjoy it, as time passes acquire a dislike to it which in some patients amounts to positive loathing. In these, of course, some other food is necessary. They may be given eggs cooked in various ways, beef juice, and even beef itself. We think it a grave mistake to overfeed patients, on the general theory that the typhoid bacillus will feed upon the food which we give and not consume the patient. That the feeding of fevers and the so-called supportive treatment are devoid of the striking advantages claimed for them, is shown by the statistics of the Massachusetts General Hospital; in these the mortality is shown to have been practically the same in the days when purging, bleeding, and low diet were employed, as it is when the feeding and supportive treatment are used.

A curious series of experiments upon animals have been made, which have shown that feeding does not increase the vital resistance in fevers. Inoculated animals were found to survive a given infection with little or no food better than those fed liberally. A similar series of experiments as to the relation of fatigue showed that exercise in an infected animal very soon overcame its vital resistance, and it succumbed early.

We have been told that it is dangerous to apply observations in animal experimentation to man, and in some instances this is undoubtedly true, but when dealing with the purely vegetative functions of life, those apprehended under digestion and nutrition, they are in the main safe. These experiments, applied to the treatment of typhoid fever patients, teach us to largely withhold food in the early period of the disease. Unless contraindicated, for the most part all food is better kept from the typhoid patient in the first five or six days of the disease. Liquids should be given abundantly. One of the best of these is beef tea made in the old-fashioned way, by which the albuminous constituents of the beef are coagulated and only the salts extracted. This furnishes a pleasantly

stimulating hot drink. The patient is convinced that he is taking a good deal of nourishment, whereas he is practically getting no food at all. Upon such a diet as this for the first few days the patient progresses better than upon milk or other food.

THE ETIOLOGY OF BALDNESS.

We always feel refreshed when we happen upon an editorial discussion of the causes of baldness. A text for such an editorial is furnished the *Southern Practitioner* for January, 1900, by an article which was published in the *Journal of the American Medical Association* by Delos L. Parker. He is of the opinion that baldness is due to a "want of mobility in the masculine thorax, as compared to the female, and therefore there is at the apex of the lungs a greater stagnation of residual air." This, he claims, "is more apt to become impure, as it does not satisfactorily discharge its function of oxygenating the blood. The toxins left in the imperfectly oxygenated blood find their point of least resistance in the poorly nourished tissues of the scalp."

Lest we do Dr. Parker an injustice, we will state that the above quotation is taken verbatim from the editorial in the *Southern Practitioner*. Our Southern contemporary rather approves of this idea, stating that inflation of the lungs is unquestionably of value in a general way, but is inclined to question the value of respiration in relieving baldness. It then launches out in what it regards as the real Simon pure causes of this most distressing affliction. It first asserts that there is a greater tendency to baldness in males than in females, and that the great number of bald heads to be found among the lords of creation is due to the almost constant wearing of close, heavy, and heating hats and caps. The *Practitioner* is satisfied that so long as the head-coverings are constructed in the way they are—and it speaks rather disrespectfully of the *chapeau de forme* as a "stovepipe"—so long will baldness follow the male sex as an avenging Nemesis.

It is gratifying to have such an easy and simple solution of the whole question of baldness, and it is such a simple chain of reasoning. Women are less bald than men; men wear heavier hats than women, and wear them longer; *ergo*, the baldness is due to the hats. Of course, such a trifling circumstance as the fact that certain races are almost exempt from baldness in the male sex, notwithstanding that they wear the heaviest and most appallingly unsanitary head-coverings, is not considered. By the Arab, and in fact all

through the East, the heavy turban is worn, which is composed of many yards of cotton cloth or silk. It is wrapped about the head, and is rarely taken off for any purpose whatever from the time its wearer rises in the morning until he goes to bed at night. These races are almost free from baldness. The Mexican peon delights in a silver-trimmed and gold-braided sombrero, which weighs among the less opulent about four pounds, and with those in more affluent circumstances from eight to twelve pounds. He finds in this remarkable head-cover one of his chief marks of social distinction, and it is worn by him during almost all of his waking hours. He, like his brother of the Arabian desert, rarely becomes bald, and if so, only in extreme old age.

A consideration of the foregoing is quite sufficient to convince one that there is really more in the baldness of modern Caucasians than the simple question of head-coverings. Perhaps it resolves itself into a question of evolution, as was suggested by an editorial writer in the *Journal of the American Medical Association* some years ago. He stated that the highest civilized races lose their hair and teeth simply because they are no longer needed. The more perfect cookery of to-day has reduced the necessity of mastication to a minimum. The ability of civilized man to always have his head covered relieved nature of the necessity of providing him with a natural thatch. In that day football had not reached its present development. So the writer was deprived of a further argument that nature undoubtedly furnishes these young men with thick heads of hair, as it is necessary that this game should be played in the open air without head-coverings. Baldness and toothlessness must, therefore, be recognized as really an advance in civilization, so that the escutcheon of the future will be, "On a scalp hairless, a decayed tooth rampant."

PROPOSED REGULATION OF MARRIAGE.

The regulation of marriage has been undertaken in a number of western States. Statutes have been passed imposing certain restrictions which have been more or less radical. Governor Thomas is urging upon the legislature of Colorado the appointing of a number of medical examiners who shall pass upon the qualification of matrimonial candidates. This board is to be a licensing body as well as a board of medical examiners, and one is to be appointed for each county. It is to consist of three physicians. No marriage license shall be issued until a certificate is obtained from the board that the

man is not less than twenty-five years old and the woman not less than twenty-two, and that both are free from dementia, organic insanity, herditary insanity, tuberculosis of the lungs or other vital organs, hereditary asthma, scrofula, or epilepsy, and that there is no blood relation existing between them. In no case shall a certificate be granted a person who is morally depraved, and who shall at the time of the application be on trial, under bonds, or in prison for felony.

It is claimed by those who would change society as it is uow ordered that the body politic creates the crimes which it punishes. Such an act as that proposed in Colorado belongs especially to that group of offenses which the law creates. In the description of the proposed law which we have read there is no statement of the penalties laid down for its violation, but we presume that fines, imprisonment, or both are contemplated for its infraction. The one reason for passing such a law would be on the theory that under the police power the State has a right to protect itself from an increase of criminals and those hereditarily diseased who may become a public charge.

The purpose of such a statute will defeat itself, if passed in Colorado. It will be very easy for people desiring to commit matrimony, who may be classed under the prohibition laid down in the statute, to go to an adjoining State and subsequently return to Colorado. Assuming that the example of Colorado is followed by other States in the Union, there will still be an opportunity to go to foreign countries, or failing in this, the plan could be followed which was so long in vogue in France—that of dispensing with the formality of a marriage ceremony at all. Those who are earnestly wishing to improve society by law, we would especially refer to the experience of France. In that country, until within comparatively recent times, matrimony has been surrounded by severe restrictions. Before the ceremony could be performed it was necessary to show the consent of the parents, to be of proper age, and that their circumstances were such as would justify matrimony. These regulations were passed with a view of protecting the State from the care of pauper children. In addition to these laws restricting marriage, until recently France has had no divorce law; the matrimonial state once contracted could only be annulled by death, or under very rare circumstances by a legislative enactment. The sociological history of these laws can easily be learned by reference to French statistics. The fact that the marriage bond could not be dissolved led to the separation and forming of new alliances not

recognized by the State or by the church, but which by common consent were recognized socially. The same was true of the difficulty with which marriages were contracted; this led to an enormous increase of so-called illegitimacy, with all the troubles it entailed for offspring, the product of unions tacitly recognized by the community, but which had no legal standing. The experience of France in relation to the laws governing matrimony should be a lesson to those proposing similar legislation in other countries.

The stamping out of hereditary diseases will not be accomplished by laws regulating matrimony, but will come, if at all, through an enlightened public mind. These questions should be settled by the individual and not by the legislature.

THE ALKALOIDAL HABIT.

The possibility of establishing immunity by the use of medicinal agents has been studied by Claisse and Brouardel. This study was undertaken for the purpose of comparing the poisons produced by germs with those of vegetable origiu, and to ascertain if the latter produced a serum antitoxin which would confer immunity to other animals. Strychnine and aconitine were both experimented with, but with neither of these drugs could large doses be reached. Morphine and nicotine soon produced a marked toleration, but the blood with the latter substance never acquired an antitoxin. The experiments of Calmette upon snake poison have shown that the latter is more nearly related to the microbic poisons than are the alkaloids.

ABSTRACTS.

MEDICINE.

Two Cases of Ephemeral Mania.—

T. J. W. Burgess, in the *Montreal Medical Journal* for December, 1899, uses the term ephemeral in preference to the term transitory used by Clouston. Transient insanity in connection with epilepsy, childbirth, and alcohol is by no means rare, but none of these conditions was present in the patients which he describes.

The first case was that of a married woman, aged 40, who was passing through Montreal and had to wait some hours for a connecting train. At that time there was nothing peculiar in her appearance. She entered a restaurant, and on the proprietor suggesting that she remove her bonnet and shawl, she abruptly left the restaurant and wandered about the streets for some hours. She entered a private house and was given some food and directed to a charitable institution. About six o'clock she suddenly jumped from a sofa upon which she had been lying, and with a piercing scream sprang toward an open window, from which she endeavored to throw herself. She then became noisy and excited, screaming incoherently, and restraint was necessary. Her physical condition was excellent, but her speech was incoherent. The pulse and temperature were normal. The maniacal condition lasted during the night. In the morning a hot bath was given and she was quieter. The following afternoon she was given $\frac{1}{75}$ of a grain of hyoscine hydrobromate. This was followed by sleep and some improvement in the mental condition. On the following morning, about forty-eight hours after the onset of the mental trouble, her mind had cleared, and there was left only a vague recollection of what occurred from the time she entered the restaurant until she was taken to the charitable home; after that she had no memory up to the time she regained her senses.

Another case was that of a young girl, who while upon a promenade narrowly missed being run over by a street-car. Three hours later, while chatting with her sister, she suddenly became incoherent in her speech, began to walk restlessly about the room, played the piano violently, and used very profane language. Six hours later the pulse was accelerated, but temperature normal. She was excited, rolling about in bed, but not inclined to violence. There

was a loud, incoherent chatter, and there appeared to be both visual and auditory hallucinations of a terrifying character. Prior to the outbreak of the attack the patient enjoyed the best of health and had a marked fondness for outdoor sports. Cold to the head was applied, and $\frac{1}{100}$ of a grain of hyoscine hydrobromate given. The following morning there was slight confusion of the intellect and motor restlessness, but this gradually passed off, and by noon she was quite well. Since then there has been no recurrence. The duration of the second case was about twenty-two hours. There was a total loss of memory after recovery, corresponding with the interval of the seizure.

The Differential Diagnosis of Chancroid and Chancre.—

The following table is taken from a text-book on genito-urinary, venereal, and sexual diseases, by G. Frank Lydston. We reproduce it here, as the differential diagnosis of chancroid and chancre is difficult, if not impossible in some cases:

THE CHANCROID.	THE CHANCRE.
Origin (confrontation).	*Origin* (confrontation).
Always due to contagion from chancroid or chancroidic bubo or lymphitis, either mediately or immediately.	Always due to contagion from the secretion of a chancre, syphilitic lesion, or from the blood of a person affected with syphilis, mediately or immediately.
Incubation.	*Incubation.*
None; the sore appears within a week after exposure.	Constant; usually of from ten days to three weeks' duration, often longer.
Commencement.	*Commencement.*
Commences as a pustule, or as an open ulcer, as a rule, but may begin as an abrasion, or perhaps a papule.	Commences as a papule or tubercle, which afterwards, in most cases, becomes ulcerated. May begin as a small ulcer.
Number.	*Number.*
Most often multiple, either from the first, or by successive inoculation.	Generally single; multiple, if at all, from the first, rarely if ever by successive inoculation.
Depth.	*Depth.*
Perforates the whole thickness of the skin or mucous membrane; "punched out" and excavated, with evident loss of tissue.	Most frequently a superficial erosion, "scooped out," flat, or elevated above the surface; rarely deep, and then cup-shaped and sloping toward the center.
Edges.	*Edges.*
Abrupt, sharply cut, eroded, undermined.	Sloping, flat, or rounded, adherent.
Floor.	*Floor.*
Whitish, grayish, pultaceous, worm-eaten.	Red, livid, or copper-colored; often iridescent. Sometimes covered by a false membrane, scaly exfoliation, or scabs.
Secretion.	*Secretion.*
Abundant and purulent, unless complicated by inflammation, and autoinoculable.	Scanty and serous in the absence of complications. Autoinoculable with great difficulty, if at all.

THE CHANCROID.	THE CHANCRE.
Induration.	*Induration.*
No induration of the base of the lesion, although may be caused by caustics, or other irritant applications, or even by simple inflammation. In such event the engorgement is not circumscribed, but shades off into the surrounding tissues and is of short duration. May be quite painful.	Firm, cartilaginous, or woody to the feel; movable upon sublying tissues; sometimes very thin, resembling parchment beneath the skin. Generally persists for some weeks or perhaps months. Typically a non-inflammatory neoplasm. Perfectly painless, unless inflamed.
Destructive Tendency.	*Destructive Tendency.*
This is characteristic in typic chancroid and very marked in the phagedenic variety. May become chronic and last for years.	Phagedena rare, with greater tendency to self-limitation. Should phagedena occur, it rarely becomes chronic.
Number of Attacks.	*Number of Attacks.*
Indefinite. May attack the same subject any number of times. Susceptibility is never lost excepting after numerous autoinoculations, such loss being only temporary.	Rarely more than one, protection from a second attack being always partial and generally complete.
Lymphangitis.	*Lymphangitis.*
Acute inflammation not infrequent. May result in abscess, or even in genuine erysipelas. May denude the parts, or cause extensive burrowing with resulting sinuses.	Acute inflammation and suppuration rare. Chronic hyperplasia of a painless character is usually present, although not always perceptible externally. Not destructive, and no burrowing of pus with consequent sinuses.
Adenitis.	*Adenitis.*
Ganglionic reaction is present in about one-third of the cases. When present, it is inflammatory and suppuration is frequent; pus often autoinoculable.	Superficial ganglia on one or both sides enlarged and indurated, painless, freely movable; suppuration rare and pus not autoinoculable.
Transmission to Animals.	*Transmission to Animals.*
May be transmitted to the lower animals.	Peculiar to the human race; but may possibly be transmitted to animals.
Prognosis.	*Prognosis.*
Always a local affection; the general system never infected. May become chronic and incurable. May be fatal.	A constitutional disease; general symptoms usually occur in about six to eight weeks after the appearance of the sore; very rarely later than three months. Never fatal *per se*.
Effects of Treatment.	*Effects of Treatment.*
Treatment by mercury always useless and in most cases injurious (save where complicated by syphilis).	Improves under the influence of mercury.

Syphilitic Leucoderma or Leprosy.—

Not long since a patient was shown to the Chicago Medical Society by Dr. A. R. Edwards with a diagnosis of anesthetic macular leprosy. The patient subsequently went to San Francisco, and there came under the observation of J. A. Silverman, who describes the case in the *New York Medical Journal* of November 18, 1899. The history of this case is as follows:

B. W. A——, aged 52 years, occupation journalist, was born in England, and after graduating from an English medical college

entered the medical department of the British army, serving in nearly all parts of the world, but principally in India. Some years ago he gave up the practice of medicine and took up journalism as a means of livelihood. Family history very good. He had most of the diseases of childhood, making excellent recoveries. Had typhoid fever thirty-seven years ago, with relapse, but good convalescence. Yellow fever in Jamaica in 1871; no sequelæ. True lues venera in 1873. Specific treatment taken at once and kept up for many years. Contracted morphine habit about twenty-five years ago, but asserts that he has been completely cured and has not taken any for twenty years, during which time he has been in excellent health, showing no signs of old age. In the winter of 1892 he suffered from a sharp attack of bronchitis, with high temperature, making an excellent recovery. In the winter of 1897 he went to Cuba on literary business, and in the month of May, 1898, his camp was attacked by insurgents, his partner killed and mutilated, and he himself severely beaten, kicked, his teeth knocked out, and spine injured; he was left naked all night, supposed to be dead. The next day he was put naked into a dungeon with no flooring, no light, and very little air; there was no possibility of sitting down, as his legs were sunken in blue-black sewage of most offensive odor. He was badly bitten by vermin, spiders, etc. After being confined in this place eighty hours without food or water he was released. He was in a critical condition, having a high fever; his legs were badly swollen and ulcerated and covered with varicose veins. The fever, with delirium, continued for weeks, during which time he was treated with hot fomentations to the legs, aromatics, and febrifuges, by a native woman. Later he walked nearly three hundred miles, in short stages, to the coast, tramping by night, sleeping in the forests with but little clothing, but with plenty of simple foods, such as fish, game, and fruits. After reaching the coast he sailed for England, where he was very ill with symptoms of myelitis, which continued until November, 1898, and were accompanied by intense neuralgia of the cord and facial nerves. At this time there was some loss of special senses, insomnia, complete anorexia, and great nervous excitability. He was examined in London, Liverpool, Glasgow, and Paris for leprosy, but was declared by the best authorities to be suffering from leucoderma or scleroderma, formerly called dungeon scurvy, a condition very commonly found on prisoners in the early centuries who were confined in filthy dungeons and so chained that they were obliged to sit or stand in one position. He then came to the United States and was examined by a Chicago physician,

who diagnosticated the case as anesthetic macular leprosy, non-contagious.

Silverman is of the opinion that the case is one of syphilitic leucoderma and not leprosy, he evidently basing his opinion very largely upon negative results of some fifty efforts to cultivate the bacillus.

Family Periodic Paralysis.—

John K. Mitchell, in the *American Journal of the Medical Sciences* for November, 1899, says that this disease is very rare, but three cases having been reported in this country. The cases observed have presented, with small variations, the same type, namely, a paralysis of the voluntary muscles, usually total, except for the head and face muscles, loss of reflexes, absence of electrical reaction, no mental or sensory disturbances, and occurring periodically at somewhat regular intervals. Nearly all the cases have instances in the parents or ancestry of the patient. In the family of the patient described by him, the first one known to have suffered from it was the maternal grandfather. A first cousin of this ancestor also suffered from the disease; both of these persons ceased to have the attacks in middle life. The patient is 19 years of age, and excepting the neurosis under consideration there is no hereditary disorder in the family. His previous health was good. The onset of the paralysis was sudden and without known cause. He awakened one morning and found that he could not move hand or foot. He was able to move the head from side to side, but could not move it from the pillow. There was no pain or loss of sensation, no impairment of function of any kind. About two months after the first attack another occurred, and for three or four years they returned at intervals of about two months, with a duration generally of about forty-eight hours, nearly always coming on during the night, so that the patient went to bed feeling no more than a trifling degree of feebleness in the legs, and would awake in the morning quite helpless. He cannot trace any single attack to excessive exercise, emotion, or indulgence. When they pass off he finds himself a little sore and stiff for a few hours, but cannot see that he is otherwise than perfectly well in the intervals. The intensity of the attack has remained about the same up to the present.

There is nothing in the history of the patient that would suggest hysteria. He is in excellent general health and well developed. Several of the attacks were observed while he was in the hospital, a

description of one of which is given. For a few hours in the afternoon or evening the patient noticed slight weakness in the legs and the knee-jerks were lessened. This preparalytic period may be absent, and he may go to bed feeling perfectly well, to awake in the morning paralyzed from the neck down. During the attacks breathing is shallow and diaphragmatic. There is slight difficulty in swallowing, and loss of appetite. While the attack lasts the water is passed only once or twice, and there are no bowel movements. There is no disturbance of the mind, and speech is not affected. The only thing that the patient complains of is the necessity of lying in one position, which is fatiguing.

Two Peculiar Cases of Appendicitis.—

C. Mansell Moullin, in the *Clinical Journal* of December 6, 1899, in a clinical lecture entitled "When to Operate in Cases of Inflammation of the Appendix," describes a group of appendicitis cases which are characterized by slight attacks of frequent recurrence, causing severe pain for a few hours, but not combined with tumor. One of these was a well built man of 30 years. For some months he had been subject to attacks of severe pain in the right iliac and umbilical regions, coming on at irregular intervals and lasting for some hours. Sometimes they were so severe that he had to lie down. Occasionally they came without apparent cause, but frequently seemed to follow exertion. The bowels acted with fair regularity. He sometimes suffered with indigestion and constipation, but they did not appear to have close relation with the attacks of pain of which he complained. Examination showed the muscles over the right iliac region rigid, but no tumor could be made out by palpation, even when under an anesthetic. Deep pressure was painful. The appendix could not be felt. There was no fever. Rectal examination was negative. On opening the abdomen the appendix was found to be free from adhesions; the peritoneum covering it was not thickened. The appendix was not distorted, and its meseutery was quite normal. In the interior of the appendix was a hard body, freely movable, which proved to be a grape-stone. This had caused some inflammation of the mucous membrane. With the removal of the appendix all of the symptoms disappeared.

Another case was that of a young lady 22 years of age, who suffered from attacks of similar character as the foregoing. The attacks lasted a few hours, and were always precipitated by exertion, such as dancing or outdoor sports. During the attacks the right iliac fossa was tender. When the abdomen was opened the

appendix was found behind the cæcum; it was almost straight, and the peritoneum and the mesentery were quite normal in appearance. The appendix itself was inflamed and the mucous liniug swollen. The appendix measured eight inches in length, and the author is inclined to think that the relation of the psoas muscle to the appendix is what determined the effect of exertion in causing inflammation.

These cases are sometimes described as appendicular colic. He is doubtful if the appendix ever suffers from a true colic, but is of the opinion that these are mild attacks of inflammation affecting the mucous membrane chiefly. In the treatment of these cases, operation is the only means of relief; if the attacks recur two or three times at comparatively short intervals, there can be no question but the appendix should be removed. It is impossible to determine the consequences. If the attacks are mild, they may never cause more than inconvenience and discomfort, but there is always danger of their going on to ulceration, perforation, and gangrene of the appendix.

A Tumor of the Pituitary Body.—

G. L. Walton, F. E. Cheney, and F. B. Mallory contribute a case of this rare and interesting condition to the *Boston Medical and Surgical Journal* of December 7, 1899. The patient was a medical man, 26 years old, of exceptional physical vigor, who first consulted Dr. Cheney in regard to his eyes on July 20, 1895. The family and previous history were good, with the exception of occasional headaches dating from early life; these were migrainous in character and accompanied by a temporary hemianopsia. He had been operated on for spina bifida in early infancy. He was a large man with rather heavy gait, large extremities, large features, large nose and mouth, with very thick lips. Hair was dry and crisp and the beard scanty. There was no enlargement of the thyroid. With the exception of a slight decrease in sight and a slight opacity in the vitreous, there was nothing to suggest disease. April 15, 1896, there was nearly complete left hemianopsia for white and colors. An exhaustive examination of the nervous system at this time revealed no impairment of motion or reflexes; in fact, the entire physical examination was negative except for the pallor of the optic disk and loss of visual acuity. On November 12, 1896, there was a still further failure of vision, and during the fall of that year he had occasional mild headaches. He also became sleepy and neglected his routine work. The apathy increased. Early in 1897 headaches increased in frequency and severity and were occasionally

combined with nausea. In February he became drowsy and apathetic. At this time there was a still further decrease in the power of vision. By midsummer of 1897 he grew weaker, and his speech was less fluent; the appetite became capricious; his gait was slow and dragging. The drowsiness increased, and the features became gradually more heavy and expressionless. During June and July he showed evident signs of exhaustion. By September his weight had decreased thirty-four pounds. The general weakness was marked; speech was slow. Early in October of 1897 he gave up professional work and remained in the country, during which time he seemed to improve somewhat. The severe headache came on in December, with extreme exhaustion, and after a period of somnolence he died December 29, 1897.

At the autopsy the sella turcica was found involved by a discrete, lobulated, encapsulated tumor, measuring 2.7 centimeters from front to back, 3.5 centimeters in width, and 3 centimeters in vertical diameter. The olivary process had disappeared. The growth was soft and granular. Microscopic examination showed the tumor to consist mainly of delicate blood-vessels surrounded by round cells, epithelial in type. The diagnosis of the tumor was perithelial angiosarcoma.

A Case of Arterial Occlusion.—

H. W. Syers, in the *Clinical Journal* of December 20, 1899, reports an exceedingly interesting case to which attention has beeu called recently by Mr. Hutchinson in the *Archives of Surgery*. Syers seeks, as does Hutchinson, for some explanation that would class these cases with those of thrombosis or embolism, though he admits that there is an entire absence of physical signs, nor is there anything in the history of the patient that would suggest such a pathology. He does not even suggest a possible relation of these cases with Raynaud's or Morvan's disease.

The patient was a single woman aged 28, who had always been in good health, with the exception of an attack of scarlet fever at the age of 15. Her illness began suddenly September 2, 1898, with pain in the abdomen coming on in paroxysms. There was vomiting and diarrhea. These symptoms continued for a day or two, when there was a feeling of "pins and needles" in the left foot, followed by severe burning. There were cramps in the left calf and an inability to move the left foot. September 4 she was admitted to the hospital and complained of nausea and pain in the front of chest and in the left foot. The temperature was 101.6°, the tongue

moist, and the pulse 96. The heart was normal on percussion, palpation, and auscultation, as were the lungs, with the exception of a slight crepitus at the base. The abdomen was generally tender on slight pressure. The urine contained a trace of albumin. The circulation appeared to have ceased as high as the knee of the left leg, and the foot seemed to be in a condition of commencing gangrene. No arterial pulsation could be detected in the left groin. September 7 there was severe pain in the left loin and tenderness on pressure. The symptoms of commencing gangrene did not increase. On September 9 no pulsation could be detected in the left femoral artery. The foot and leg remained in the same condition, the toes being cold and blue, with dark-red spots here and there, until September 26, when it was noticed that the necrotic appearance was less marked. The pain also disappeared. October 6 pulsation was felt in the left femoral artery. On November 4 arterial pulsation was comparatively strong and sensation had returned, and on December 10 she was discharged.

Henpuye.—

A. J. Chalmers, in *The Lancet* of January 6, 1900, describes a case peculiar to the Gold Coast of Africa, to which references are rarely made in the literature.

Henpuye starts in a native of West Africa during, or soon after, an attack of yaws, in which there is a history of the nasal mucous membrane being attacked. It begins as a small bony swelling, symmetrically placed on either side of the nose. This swelling, which is generally oval, with the long axis directed downward and outward, is attached to the nasal bones, the nasal process of the superior maxilla, and also to the superior maxilla in the more advanced cases. It is produced by the deposition of new bone under the periosteum on the external aspect of these bones, and grows slowly in all directions. It in no way affects the mouth or the nasal cavities in any case which the author has seen, and the nasal ducts are quite unaffected. Rarely the growth is asymmetrical, being situated only on one side of the nose. Pain in the nose, with the presence of a sore in that organ, is the symptom complained of at the commencement of the disease; later headache is sometimes felt, and pain in the swelling during wet weather. As the growth becomes larger it seriously interferes with the sight by growing up in front of the eyes, but he has never seen it cause destruction of the eyeball. In many cases the patient has to bend his head downward in order to be able to see over the top of the swelling. The skin over the tumor

is normal and is freely movable. The course of the disease is that the swellings may cease to grow at any period of their existence—that is, they may remain quite small, or may grow to be large lumps, in the latter case giving rise to the deformity and the interference with the sight, but he is unacquainted with any case in which they break down or ulcerate. The disease is much more common, in his experience, in men than in women.

In the treatment of the affection, removal by surgical means is the one method that offers hope of improvement. The tumor, which is of the consistence of cancellous bone, is soft and is easily cut with the forceps. Microscopically, it is shown to be largely composed of cancellous tissue. The ossification begins under the periosteum, and it is believed to be an osteoplastic periostitis.

The Effect of Certain Occupations on the Pharynx.—

Seymour Oppenheimer, in the *Medical Record* of December 16, 1899, says this question is a complex one, and to answer it would require an extended study of series of cases occurring in persons engaged in various pursuits. In some cases a causal relation can be made out, as in that of a tinsmith, who is engaged in soldering metals. A mixture of several acids is used in this process, and the fumes arising cause a constant irritation. A rest from this occupation causes complete relief from this distress, but the irritation is speedily resumed as soon as a person returns to the work. The inhalation of dust fibers and chemical agents are factors of more or less importance in producing pharyngitis. Many industrial workers are affected with these disorders, dependent to a certain extent upon their occupation. The primary pharyngeal changes are those of acute congestion and inflammation. Chronic changes are the ultimate result. Pharyngitis produced in part or wholly by the occupation does not differ in any respect from the ordinary forms. Normal nasal chambers and nasal breathing are preventives of pharyngeal disease due to occupation.

Accentuation of the Second Sound of the Heart.—

S. R. Creighton, in the *Medical Record* of January 13, 1900, gives a study of the relative intensity of the second sounds at the base of the heart, as observed in 1000 cases. His conclusions are that the accentuation of the pulmonic second sound of the heart is almost invariably found in young children and is frequent in youth. After the fortieth year of life the reverse is true, and it is rare to find the pulmonic sound as loud as the corresponding aortic sound.

In the decade between twenty and thirty there is no marked accentuation of either sound. In view of these facts it is obvious that when an accented pulmonic sound is spoken of as corroborating a diagnosis of heart disease, an increase in this sound is meant over that normally to be expected. A mere accentuation of the aortic sound is not sufficient. In interpreting the meaning of an accented pulmonic second sound in suspected mitral stenosis the age of the patient must be considered. It is in relation to the age that the degree of accentuation is to be determined.

Blackwater Fever.—

W. H. Crosse, consulting medical officer to the Royal Niger Company, in *The Lancet* of January 6, 1900, claims that blackwater bears the same relation to malarial fever as hyperthermia to any of the ordinary fevers. He regards it as merely a severe form of malarial infection, and in this differs from Koch, who is of the opinion that this disorder is not caused by the malarial parasite. Koch claims that the disorder is due to the administration of quinine, but Crosse reports a case in which it developed in a patient who had taken none of the drug. The patient reported by him presented the malarial parasite in the blood before the attack. This was a typical case of the disease, and quinine was administered with marked improvement of the symptoms, the patient recovering. He makes the point that in Koch's cases, and others that have been reported, the parasite is not looked for before the development of the hemoglobinuria.

The Combination Stomach-tube for the Diagnosis of Gastric Disorders.—

C. S. Fischer, in the *New York Medical Journal* of December 30, 1899, describes a stomach-tube which in its essential parts does not differ from those commonly employed, except that its end is formed with a two-way stop-cock. Constructed to fit the lumen of the tube, he has devised a douche, and a lamp for the transillumination of the stomach. The advantage claimed for his instrument is that a single passing of the tube is all that is necessary, thus saving the irritation of the esophagus and the distress of the patient which comes from passing tubes frequently. The stomach-tube once introduced, lavage is easily performed and the stomach filled with clean water; then, without removing the tube, the lamp may be introduced and the position of the organ determined. The douche may be introduced in the same way and the stomach thoroughly cleansed.

Pathology of Migraine.—

C. W. Cutler, before the New York Academy of Medicine (*Medical Record*, Jan. 13, 1900), defined migraine as a periodical or paroxysmal neurosis, making its appearance in childhood or in early adult life, characterized by headache often preceded by an aura, and associated with vomiting. The visual aura is the most common, and usually consists of peculiar color perceptions or spasm of the muscles of accommodation. Olfactory or other sensory auræ are rare. In the majority of cases migraine is transmitted in the family as such. Epilepsy might be accompanied by phenomena simulating migraine or alternating with it. Migraine shows a tendency to begin in youth and not in middle life. Heredity is a predisposing factor in from 90 to 95 per cent of all cases.

SURGERY.

An Intestinal Suture.—

R. C. Turck, in the *Journal of the American Medical Association* of January 27, 1900, describes a modified Halsted suture, which he

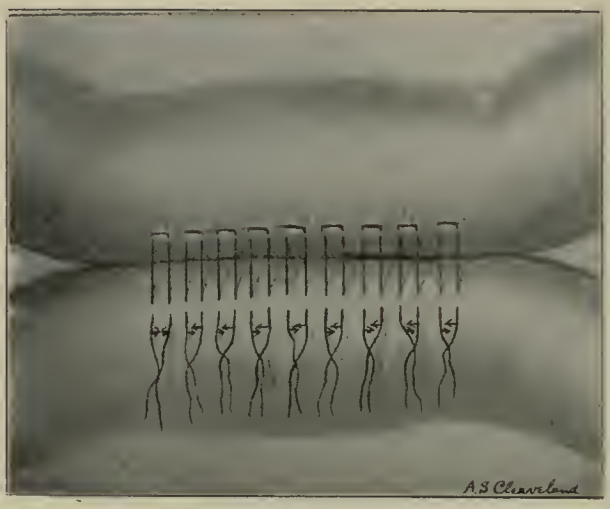


FIG. 1.

thinks combines simplicity with strength and rapidity of insertion. In Fig. 1 is shown the Halsted suture, inserted, but not tied.

When the knot is tied the serous surfaces of the bowel are

approximated and the cut edges inverted. When tied this suture draws longitudinally, approximating the wound surfaces, but at the same time there is a lateral pull, as shown by the arrow heads. This lateral tension draws the sides of the sutures together, but at the same time draws the sutures away from each other, leaving weak points, as indicated in Fig. 2. To avoid this the sutures must

FIG. 2.

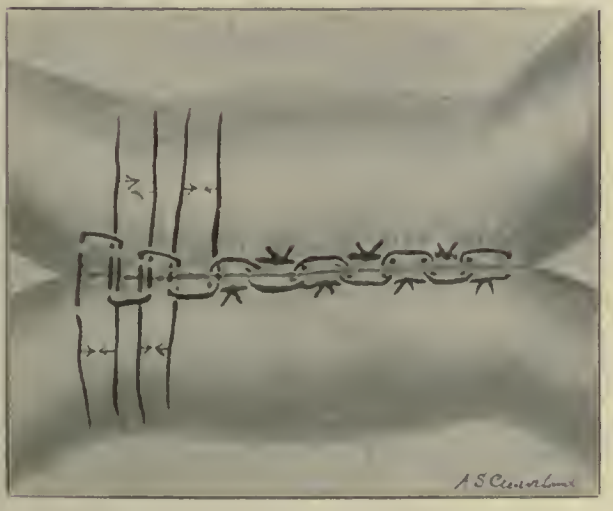


FIG. 3.

be placed close together, which consumes considerable time. The modification of the Halsted suture shown in Fig. 3 forms a lock-stitch, as each looped suture is passed through the one adjoining. This permits of a less number of sutures, as the loops may be made nearly twice as wide as with the Halsted stitch.

In using the suture, before the first is tied the second is inserted, starting, however, on the opposite side of the wound so that the knots are alternated. The second suture is not placed beyond the first as in the Lembert and Halsted methods, but one-half of the second loop passes inside the second half of the first loop, thus locking the two. As soon as the second is inserted the first is tied, and the third inserted and the second tied, and so on. After the suture is placed each suture is passed under the loop and over the loose end of the suture, so that when all sutures are tied a complete chain is formed.

He claims for this suture that it is absolutely tight, preventing all leakage, and that it is simple and easy of application.

Local Analgesia Produced by Eucaine.—

A. E. Barker, in *The Lancet* of January 20, 1900, has used local analgesia in fifty-three cases and has noted no ill effects following the use of normal saline solution to which 1 in 1000 of eucaine is added. No toxic troubles have arisen, even when five or six ounces of the solution was used, and the prompt union of wounds has not been interfered with. In a few cases free sweating and pallor were noted; it is possible that these symptoms may have been due to other causes than the constitutional effects of the drug. In long operations he has sometimes used as much as six ounces of the solution. Children were usually found unsuitable subjects for local analgesia; timid adults are likewise better dealt with by general anesthesia. In acutely inflamed parts it is often difficult to obtain satisfactory obtunding of the pain sense.

The method requires considerable practice on the part of the surgeon before he can obtain a perfectly satisfactory result. It is necessary to have a good syringe, easily sterilized, and fine needles. The solution must be warm when used and must be fully distributed over the area to be dealt with. Five minutes after its introduction the tissues are ready for operation, and after about twenty minutes they will require further injection. Light handling must be cultivated, and all dragging and tearing as far as possible avoided. The operating table must be comfortable, as the patient becomes sore and fatigued if placed upon a hard surface. A screen between the

patient and the operator is desirable. The following cases were operated on during 1899: Radical cure of hernia, 15; herniotomy for strangulation, 1; resection of intestine for gangrene, 1; gastro-enterostomy, 1; abdominal section for epityphlitis, 2; for perforated gastric ulcer, 1; for carcinoma of gall-bladder (exploration), 1; removal of goitre, 4; gouging carious bone, 1; empyema, 4; varicocele, 1; for varices on legs, 5; colotomy, 4; removal of scar on nose, 1; rectal cases, 2; sublingual exostoses, 1; salivary fistula, 1; abscesses opened, 2; removing of wire, 2; wiring patella, 2; stitching a semilunar cartilage in the knee, 1; total, 53.

In these cases, nine were anesthetized in the middle of the operation. Rectal cases as a rule do not lend themselves readily to local analgesia.

Decalcified Cancellous Tissue in the Treatment of Wounds.—

F. W. Robinson, in the *Clinical Journal* of January 17, 1900, says that the antiseptic treatment of wounds has tended to circumscribe research in other directions. The "sponge grafting" of Hamilton, of a few years ago, while unsuccessful, demonstrated the fact that there were possibilities in the general principles involved. The term grafting he restricts to where epithelium and skin are used. In other cases the substance used acts in a passive manner, and the tissues of the part proliferate and grow into the substance, the latter acting as a carrier of blood by which the vitality of the cells is maintained. Strictly speaking, this should be called a method of healing by culture. Sponge grafting is essentially a sample of the culture method. The porous nature of the substance absorbs blood from the tissue, thus nourishing the plasma cells, the framework of the sponge supporting the growing cells. The success with this method is what led the author to use decalcified cancellous bone, which is prepared from the joint ends of the large bones of the ox. They are sawn into small fragments, from which the fat is removed by boiling. They are then put in ten-per-cent solution of hydrochloric acid until the cancellous portions are quite soft. The softest portion of the cancellous tissue is then selected and put into soda solution to neutralize the acid, and afterward bleached in a solution of peroxide of hydrogen. The result is a soft spongy material, white and porous. This is preserved in a five-per-cent solution of carbolic acid, and before being used is washed in sterilized water. This decalcified bone differs from sponge in the fact that it is softer, is better adapted for the surface of wounds, is more easily absorbed, and irregular cavities can be easily filled with it.

Inversion of the Uncut Appendix.—

J. F. Baldwin, in the *Medical Record* of January 20, 1900, says that this method obviates the necessity of opening the bowels and avoids the risk of infection. His attention was first called to an article on the subject by Dr. Edebohls. He has practiced the method in more than one hundred cases. He has performed the operation not only in the cases in which he has operated for appendicitis, but in all those in which he has opened the abdomen, for whatever purpose. It is a routine procedure to examine the appendix in all such cases and to immediately invert it.

In performing the operation the appendix is freed from all adhesions and brought into view in the usual way. The tip of the appendix is held by an assistant, who with the thumb and forefinger of the other hand supports the colon edges below the origin of the appendix. The ligature is then introduced and the mesoappendix ligated, which is then severed just beyond the ligature. The appendix is then freed of its peritoneal coat. The appendix, having thus been prepared for inversion, is seized between the thumb and forefinger of one hand and inverted by pressing upon it with the blunt end of a needle. The mucous membrane having been inverted for some distance, the needle is substituted by a long probe, which easily completes the inversion. A single stitch is then taken closing the opening in the bowel, which then marks the point of opening of the appendix. In a few cases in which operation is made for appendicitis, inversion is impossible, or so difficult as to be unwise. These cases include gangrene of the appendix and those in which there is a constriction near its base.

Volkmann's Ischemic Paralysis.—

H. W. Page, in *The Lancet* of January 13, 1900, says that few are familiar with this form of disease, as it is very rare. It is an affection but little amenable to treatment. A patient who came under his care was a boy four and a half years old, first seen in November, 1898. The August preceding he had sustained a transverse fracture of the humerus, near the elbow. The arm was dressed in an anterior and posterior splint in a semiflexed position. The end of the anterior splint had pressed below the bend of the elbow in such a way as to form a superficial slough. This came away and left a wound that healed by granulation. Soon there was noticed an increasing contraction of the fingers, which presented later a typical *main en griffe*. This form of paralysis, to which he gives the name ischemic paralysis, comes as a result of prolonged

immobilization of the forearm fractures by any form of apparatus which interferes with the free circulation of the blood through the muscles and nerves of the part. The reporter has found no described cases except those of Volkmann, and one in Anderson's work on the fingers and toes. Tendon lengthening was performed in this case, with a marked improvement in the use of the hand.

Surgical Treatment of Perforation of the Bowel in Typhoid Fever.—

W. W. Keen, in the *Journal of the American Medical Association* of January 20, 1900, gives a critical summary of this operation up to date and a table of 158 published cases. The surgeon should be called in any case of typhoid fever in which abdominal symptoms indicate possible perforation. There may sometimes be recognized what is known as the preperforative stage. If this is noted, exploratory operation should be performed under cocaine anesthesia before perforation, shock, and sepsis have occurred. After perforation, operation should be performed at the earliest possible moment, always waiting until the primary shock, if any, has subsided. In cases of suspected perforation a small exploratory opening should be made under cocaine, to determine the existence of a perforation; and if hospital facilities for a blood-count and for immediate bacteriological examination are at hand, their aid should be invoked. The results of operation show that nearly, if not quite, one-third of the cases of perforation can be cured by early surgical measures.

Surgical Treatment of Gonorrheal Arthritis.—

John Oconor, in *The Lancet* of December 9, 1899, has of late practiced arthrotomy and drainage in all cases of this disease. He particularly recommends early operation in this disease, as by it the joint structures are preserved from prolonged immersion in a particularly destructive exudate. He reports ten cases, in eight of which the patients were discharged cured; in one the result is not stated; and another is still under treatment. By cure in these cases is understood a joint of normal contour and function.

One of the typical histories in this series of cases is that of a patient who was admitted to the hospital January 2, 1899, suffering from acute gonorrhea and arthritis of the left knee. The following day arthrotomy was performed. Two weeks later the joint was of normal outline and function. On the 23d of the same month the right wrist became involved, and ten days later it was opened and a teaspoonful of turbid serum removed. Some three weeks later the patient was discharged cured.

A Source of Error in Skiagraphy.—

Carl Beck, in the *New York Medical Journal* of January 6, 1900, says there is no need of emphasizing the value of the Roentgen ray, particularly in regard to fractures. While much experience is needed in interpreting the shadows given by soft tissues, those made by the bones are believed to be beyond dispute. He describes the case of a boy four years of age, who while playing sustained a fracture in the lower third of the tibia. The break was oblique, extending from the front upward and backward, the upper fragment overriding the lower anteriorly. In this position a skiagraph taken from before backward failed to show the slightest defect in the bone. Another, made from side to side, revealed the fracture. This case, and the possibility of similar errors being made, leads him to emphasize the necessity of making exposures not only from before backward, but from side to side.

Acute Suppurative Arthritis of Children.—

Under this heading James E. Moore, in the *Journal of the American Medical Association* of February 3, 1900, describes a class of cases which have been variously termed "epiphysitis" and "acute osteitis of growing bone." Such inflammations occur, as a rule, as complications or sequelæ of other disease; they may begin either as a synovitis, epiphysitis, or an osteomyelitis. In those cases in which the synovial membrane is chiefly involved, the symptoms as a rule are mild. The temperature is not high, and when the joint is quiet there is usually no pain. The most common error in diagnosis is to confound these cases with rheumatism. The chief difficulty is to differentiate between a suppurative synovitis and an osteomyelitis. In the treatment of these cases the author lays the joint open freely and explores with the finger, after which it is irrigated and free drainage is provided.

A New Cystoscope for Catheterizing the Ureters.—

M. Schlifka, in the *Wiener Klinische Wochenschrift* of January 4, 1900, describes a new and somewhat complicated cystoscope with which a catheter may be introduced in the ureters. It differs very little from that of Casper. The instrument is of the usual caliber and has a slightly curved beak, in which is situated a small electric light. Above this is a prism. On the curved side of the instrument is a tube which admits of the introduction of a small filiform catheter, which is carried in front of the prism, and in this way may be engaged in the opening of the ureter by direct manipulation. The instrument seems to be complicated, and as the main purpose for

which catheterization of the ureters is undertaken is to obtain separately the urine from each kidney, this is better carried out by the instrument invented by M. L. Harris.

White Gangrene.—

G. G. Hopkins, in the *Philadelphia Medical Journal* of January 6, 1900, says that this term is applied to atrophic disturbances which are set up in the tissues by the application of the *x*-ray. The term burn, which is often applied to these injuries, is incorrect, as they are produced neither by the application of heat nor fire. A burn is apparent almost instantaneously upon the application of heat in different forms. The application of the electric current also burns and is immediate. The effect of the *x*-ray upon the tissues is never noticed immediately. Its injurious action is not shown until weeks and sometimes months after exposure to the ray. The causes of injury from the *x*-ray are stated to be improper apparatus, too long exposure, too short a distance between the tube and the object to be examined.

Double Paralytic Varus in Peripheral Neuritis.—

H. L. Taylor, in *Pediatrics* of January 1, 1900, says that peripheral neuritis is one of the exceptional causes of this deformity. The patient was a girl 13 years old, who began to have pain in the feet, ankles, and thighs about two years before she came under observation. After a time the pain subsided, and the feet became weak and deformed. There was atrophy of the perineal group and tenderness on pressure over the nerve trunks. The electrical reactions were diminished and the tendon jerks were feeble. The arch of the foot was exaggerated, and there was a tendency to foot-drop. The heels were displaced inward and downward and adducted.

Movable Kidney Causing Symptoms of Gall-stone.—

T. J. Maclagen and Frederick Treves, in *The Lancet* of January 6, 1900, report three cases in which a movable kidney produced symptoms strikingly like those of gall-stone. Not only was there pain in the right hypochondriac region, but there were recurrent attacks of jaundice. The recurring attacks of colic presented nearly the same symptoms as those due to the passage of biliary calculi. In two of his cases the recurring jaundice was due to the pressure of the misplaced kidney upon the cystic duct, and in another case to the pressure upon the common duct. The latter presented the most marked jaundice.

THERAPEUTICS.

Treatment of Consumption.—

William Osler, in the *Maryland Medical Journal* for January, 1900, says that the practical problems in the treatment of consumption are very great, as at least 75 per cent of the cases cannot be treated in sanatoria, nor can they have the benefit of a change of climate. He thinks that Baltimore has from eight to ten thousand cases of tuberculosis, half of which have no systematic treatment.

The arrest or cure of tuberculosis is a question entirely of nutrition, and the essential factor is so to improve the resisting powers of the body that the bacilli can make no further progress.

The quality of fresh air in our large cities is not very good, but it is the best a large proportion of patients can possibly breathe. It is a great deal better than the atmosphere of overheated, ill-ventilated rooms in which the majority of them live. In the home treatment of consumption he gives the following directions:

Take the almanac and count off the hours of sunshine. In winter cut off two hours in the morning and two hours in the evening, and for the rest of the day the patient is to be out-of-doors. If there is no possible arrangement for life out-of-doors, the patient is to be in a room with southern exposure, with the windows wide open. If there is a balcony or a veranda, with a good outlook toward the south, it should be arranged for the patient. If not, a sheltered protection can be put up in the yard at a moderate cost. On a well-padded lounge, covered well with a couple of thick blankets, the patient sits or reclines all day. In very inclement weather the patient may be brought indoors, but no degree of cold is a contraindication. The continuous open-air life, at rest, is the most powerful influence that can be exerted against the fever of tuberculosis. As the temperature goes down under this treatment, the appetite improves. Overfeeding should be practiced. The best means of carrying this out is a gradual increase in the number of raw eggs taken by the patient, which may begin at one egg and be carried up to where twenty or twenty-four are taken in a day.

C. S. Millet, of Brockton, Mass., in the same journal, gives his experience with the night air of New England in the treatment of consumption. He says that one-fourth of the deaths in the community in which he practices are caused by this disease. He gives

pictures of open-air bedrooms, or rather platforms, which he has had constructed on ordinary dwellings. Patients are instructed to sleep on these platforms, and if the bodily temperature is above normal they are to spend the greater part of the day reclining. The essential features of the treatment which he has tried to enforce are: The patient is to buy a clinical thermometer and to use it regularly at 9 A.M., and 1, 4, and 8 P.M. The patient is to make his own record of the temperature. If the one o'clock temperature is 99°, or below, the patient need not be confined to his bed during the afternoon, but the eight o'clock temperature will decide whether he has taken too much exercise. Patients are advised to keep their beds if the temperature is above 99.5°. The patient keeps a record of the number of hours which he spends in the house, and is urged to eat as much food as possible. Most patients are required to take a cold sponge bath in the morning and another bath at about 90° before going to bed. Particular attention on the part of the physician is directed to the nose and throat, but as a rule no constitutional treatment is employed.

Respiratory Gymnastics in Pulmonary Tuberculosis.—

E. Ripard, in *La Presse Médicale* of December 23, 1899, says the salient changes in tuberculosis are not alone connected with the disappearance of fat from the body, but in addition there is a true muscular atrophy. This not only affects muscles of mastication, but includes the muscles of respiration as well as those of the extremities. The effect of this muscular weakness upon the chest is to allow the weight of the shoulders to fall forward, pressing the upper part of the chest and bending the dorsal spine. In this way the muscles of respiration lose their function; there is a diminished exchange of air in the upper as well as the lower portion of the lungs. Respiratory gymnastics have for their purpose the restoration of tonicity and strength of the muscles of respiration, but in addition should be directed toward a complete respiration so that the lungs are expanded in their upper as well as their lower portions. Respiratory gymnastics are in themselves not curative, but are a most important adjuvant in the treatment of pulmonary tuberculosis.

The most important of the respiratory gymnastics are deep inspirations. These are preceded by prolonged expiration. In this process the mouth is widely opened and the air taken in as rapidly as possible. This is directed many times in the day. In addition many systematic movements should be prac-

ticed. The first of these is to place the hands upon the hips and raise the weight of the body upon the toes. The second movement is to place the hands upon the hips, toes together, and rotate the body to the right and then to the left as far as possible. A third movement is to place the feet together, the arms above the head, and take at the same time a deep inspiration. When the lungs are completely filled with air, the arms are brought down to the sides of the body and a complete expiration made. A fourth movement is to have one patient stand in front of another, they grasping each other's hands and successively pressing the arms and shoulders backward. These movements are to be made slowly and with energy and without shifting the position of the feet. Three other movements are employed, but they seem to be of less importance than the foregoing. The effect of these is to exercise the respiratory muscles and increase the thoracic cavity. Executed methodically many times a day in the open air, they are of very great importance in the treatment of pulmonary tuberculosis.

Treatment of Acute Croupous Pneumonia.—

J. M. French, in *Merck's Archives* for January, 1900, has made a collective investigation of the practice of physicians about Millford, Mass., in reference to the treatment of pneumonia. A circular letter was sent to thirty-seven physicians asking for their opinion of the possibility of aborting the disease. Nineteen were of a negative opinion, while nine were in the affirmative. Two were doubtful. Local applications at some time and at some stage of the disease are used by all. Sixteen use poultices more or less. A light liquid diet is preferred by the majority. Strychnine is the favorite remedy for maintaining the heart's action; next after strychnine, digitalis is preferred. Aconitine, aconite, and veratrum are used to lessen the temperature by thirteen, and sixteen are in favor of using the various coal-tar antipyretics. On the whole, expectorants were not favorably mentioned; five never use them, and twelve do so but seldom. Only three spoke favorably of their use. Of bleeding, twenty-two had never employed it, but eight of these regard it as a favorable practice in sthenic cases. Six report bleeding in one or more cases with generally favorable results. Seventeen are of the opinion that opium in some form is useful to relieve cough and produce rest, the general tendency being to a sparing and judicious use of this sedative. Alcohol is used in some form as a routine measure in nearly all cases by six physicians. Eleven others state that they use alcohol but seldom. Of the use of the cold bath or

local application of ice to the chest, fifteen answer no; four use the cold bath or cold sponge; five have used local applications of ice in some cases.

Treatment of Herpes Zoster by Picric Acid.—

La Presse Médicale, in the December 16, 1899, issue, discusses the results obtained by different observers in the application of picric acid to herpes zoster. Delebecque has obtained brilliant results from the application of an aqueous solution. The strength employed was 12 parts to 1000, and it was applied freely to the affected area by gauze compresses or absorbent cotton. The compresses wet with the solution were retained in position by a roller bandage, which was removed after some days. Invariably there was found a very marked improvement in the local conditions. Thiery and Floquet have also treated herpes zoster with picric acid, but have employed ethereal or alcoholic solutions of much greater strength, the alcoholic containing ten per cent of the acid and the ethereal five per cent. These applications are followed by some pain, which disappears quickly. Brocard has prepared a collodion application composed of the following:

Picric acid	75 grains.
Cannabine	25 grains.
Alcohol	2 drachms.
Ether	3 drachms.
Elastic collodion	4 drachms.

Such an application has a marked sedative action, relieving the violent pains, and the intense itching which sometimes accompanies zoster. It protects the part and prevents the possibility of secondary infection. The crusts which are formed by this application are a valuable protection to the new epidermis.

Harmfulness of Sedatives in Acute Mania.—

C. K. Hitchcock (*Journal of Mental Science*, January, 1900) says that he has treated at the York Lunatic Hospital 206 cases of acute mania. Of these 171 recovered, eight died during attack and because of the mania, three died during the attack from intercurrent bodily disease; twelve were discharged improved, seven were transferred to other asylums, and five remained under care. The ratio of recoveries to the number of cases under treatment was 83 per cent, and the ratio of deaths 3.8 per cent. Excitement and sleeplessness were prominent symptoms in all cases. He did not use sedatives in the treatment of any one of them, and is of the belief that in consequence the proportion of recoveries was larger. No known

sedative will cure or cut short acute mania, but if they are given in sufficiently large doses to subdue maniacal excitement there is a possibility of permanently harming a patient. Continuous sleeplessness is not in itself a condition incompatible with recovery. He thinks that the use of sedatives leads to the neglect of treatment which will remove the cause of the excitement in many cases. A purgative in many cases may be very useful in overcoming the excitement. The occasional use of the wet pack or hot bath, and the judicious application of stimulants, are often very helpful for the same purpose. If patients are in a physical condition to admit of their being kept out-of-doors, they should spend most of the time in the fresh air.

Diet in Typhoid Fever.—

R. W. Marsden, in *The Lancet* of January 13, 1900, records his results in dieting two hundred cases of typhoid fever. In abandoning a milk diet he does not believe that the food should be wholly unrestricted, but there should be definite rules in the diet of cases. All patients receive milk only, at first. In mild cases without contraindications the patient should be fed on successive days with custard, fish, mashed potatoes, chicken, bread and butter, and finally with minced meat, remaining on this diet until convalescence is well established. In a severe case a diet of milk and perhaps juice of meat might have to be continued well into the period of convalescence. Generally speaking, the individual patient and his condition have been alone considered; the patient's wishes in the manner of diet have constituted a most important help. Solid food is not forced upon patients, but is only given where it is accepted cheerfully. In view of his experience in these two hundred cases he concludes that a careful system of diet has no injurious consequences. It is of benefit in that there is a more rapid recovery, diminished risk of surreptitious feeding, a less tendency to bolt food when allowed without proper mastication, and finally a marked decrease of post-typhoid anemia, gangrene, etc. He closes with the statement that there is no justification for resisting a craving appetite in the manner at present in vogue.

Electrolysis for Aortic Aneurism.—

H. A. Hare (*Therapeutic Gazette*, January, 1900) says he operated upon a case in March, 1898, by electrolysis. The patient up to the time of operation had been bedridden, but after it he was able to leave his bed and get upon the street. The subjective symptoms

were all improved. This improvement continued until October of the same year, when it was found that a second aneurism had developed which ultimately led to a consolidation of the lung and the death of the patient from exhaustion.

In April, 1899, he saw a patient with a rapidly growing aneurism of the aorta, which had eroded the second, third, and fourth ribs. The growth had been noticed one year before. The operation consisted of the introduction of ten feet of gold wire, through which was passed a galvanic current of from 10 to 100 milliamperes. At the end of ten minutes a distinct hardening of the tumor was noticed. Nine days later the tumor had become firm and the expansile thrill was absent. Early in May the patient was able to sit up and to walk across the room. One month after the first operation it was repeated, which was followed by a further marked contraction of the tumor.

The writer says that the statistics of the operation are encouraging, and no case so far has been recorded in which death occurred during the procedure.

Ichthalbin as a Substitute for Ichthyol.—

Samuel Wolfe, in *Merck's Archives* for January, 1900, says that in his practice ichthyol, while a valuable remedy, has proven to be so disagreeable that it has been necessary to suspend its administration in many cases. Ichthalbin is an albuminate of ichthyol and is said to be free from the objections which have been made to ichthyol. He has employed it as an insufflation in chronic diseases of the throat and in diphtheria, always with marked benefit. In these cases from seven and a half to fifteen grains was blown into the throat at intervals of three or four hours. He has had tablets prepared containing five grains, and they are to be made as hard as possible so that they will dissolve slowly in the month, and thus keep up a continuous medication of the fauces and pharynx. He has used ichthalbin in mucous colitis, with benefit. He has also found it very useful as a local application in the buccal disorders of syphilitics.

Treatment of Gall-stone.—

T. Lauder Brunton, in the *Clinical Journal* of January 10, 1900, says that during the passage of a gall-stone about the only useful remedy is subcutaneous injection of morphine. In mild cases, in which pain is not severe, compound spirits of ether, or Hoffmann's anodyne, may be used in ten-minim doses. In cases in which

morphine is badly borne inhalations of chloroform may be substituted. He has improvised a self-regulating inhaler by placing a small piece of blotting-paper that will absorb about one-half drachm of chloroform in a tumbler. This the patient grasps and inhales. As soon as muscular relaxation is reached the tumbler falls from the patient's face; the same result is obtained with a Junker's inhaler, in which the patient compresses the ball, forcing the air through the apparatus, and with it the chloroform vapor into the mouth. As soon as partial anesthesia takes place the inhalation ceases, owing to the cessation of active efforts on the part of the patient.

In the interval there are but three methods of treatment that are of value: The first is Carlsbad salts drunk with hot water at home; the second is a visit to Carlsbad; and the third is the opening of the gall-bladder and extraction of the gall-stone.

Chloretone as a Hypnotic.—

According to W. M. Donald (*Therapeutic Gazette*, Jan. 15, 1900) this substance is a hypnotic, analgesic, anesthetic, and antiseptic. It is a trichlor-tertiary-butyl alcohol. It is prepared by adding caustic potash to equal weights of chloroform and acetone, and occurs in white crystals and has the odor of camphor. It is slightly soluble in water, but freely so in alcohol and ether. It is best administered internally, in the form of tablets. It is especially valuable as a hypnotic and a local anesthetic, as it is free from the depressing after-effects, and is safe even when administered in large doses. The writer describes the case of a patient who had been addicted to alcohol and morphine, who as a result of pain and sleeplessness took 120 grains of chloretone in twenty-four hours. Drowsiness was persistent; coordination was badly impaired, but muscular power was not lost. There was a loss of the pain sense, and general anesthesia; the drowsiness continued for several days. At the end of that time full consciousness was regained with no untoward results, excepting a gastric irritation which had been present before the dose was taken. As a result of this very large dose the sleep continued for six days.

Wood-pulp Poultices.—

F. P. Gordon, in the *Montreal Pharmaceutical Journal* for January, 1900, reiterates his formerly expressed opinion that wood-pulp is an admirable substitute for flaxseed meal and other substances in the preparation of poultices. The sheets of wood-pulp can be obtained directly from the mills; his supply came from the

McDonald Paper Mills, Manayunk, Philadelphia, Pa. The cost is nominal. The sheets of wood-pulp can be had in any thickness and in any size if a demand is created for them, as this is the common way in which wood-pulp is shipped from the mills to the paper-makers. The looser the texture of the sheets, the better the results. The unbleached pulp is the best. In preparing the poultice a sheet of the pulp is cut of sufficient size to cover the part. It is then soaked in hot water until it has become thoroughly softened, when it is slightly squeezed to remove the excess of water and applied to the part. The wood-pulp will absorb from four to five times its weight in water. When the poultice becomes cold it is removed and soaked again in hot water and reapplied. The wood-pulp easily absorbs antiseptic solutions, and in this way may become an antiseptic dressing as well as a poultice.

Subcutaneous Injections of Gelatin Serum in Hemorrhagic Variola.—

Boy-Teissier, in *La Presse Médicale* of December 10, 1899, reports that there has been an epidemic of variola raging at Marseilles since October last. The extreme fatality of hemorrhagic variola is shown in the statement that he had eight cases in a month with eight deaths. The success which has attended the use of gelatin artificial serum in the treatment of purpura hemorrhagica led him to try the method in hemorrhagic smallpox. In a series of seven cases, in which a single injection of two hundred grammes was used each day, there were six deaths and one recovery. In a still later series of thirteen cases there were five deaths, but three of these occurred very soon after admission. Of the remaining ten, two died, six recovered, and two are rapidly improving. The favorable results in the last cases are attributed to beginning treatment during the premonitory signs of hemorrhage, nosebleed, and injections of the conjunctivæ. In the latter series two injections were given of two hundred grammes each, each day. Of the last series, 121 injections in all were used, and but three abscesses resulted.

Peroxide of Hydrogen in the Removal of Hirsuties and Chloasma.—

L. D. Bulkley, in the *Journal of the American Medical Association* of December 23, 1899, says that peroxide has long been used for changing the color of the hair, and advantage may be taken of this in connection with the growth of superfluous hair on the faces of women. In a number of cases he has used it where the hair was too fine to admit of its removal by electrolysis. Where there are

innumerable fine hairs it is quite impracticable in the early stages to practice electrolysis. A free and repeated use of the peroxide will improve the appearance in a very short time. This is done by bleaching the hairs. It also exercises a certain retarding influence on the growth of the hair. This result is slow, but with a faithful continuance of the remedy the hairs diminish in number. In using the peroxide it is well to dilute it one-half and gradually increase the strength.

In chloasma it should be applied upon pledgets of cotton, allowing the solution to permeate the skin as deeply as possible. Applied in this way it may cause some desquamation, but this is easily remedied by a little lanolin or rose ointment.

Treatment of Influenza.—

G. E. Crawford, in the *Journal of the American Medical Association* of January 27, 1900, says the treatment of this disorder must be mainly symptomatic. Quinine has been largely used, but excepting in small tonic doses is quite useless. Some of the coal-tar derivatives give marvelous relief from pain during the onset; if not carefully used, however, they add to the prostration and cardiac weakness. A favorite prescription is:

Acetanilid	2 grains.
Caffeine	½ grain.
Camphor monobromated	1 grain.
Capsicum	½ grain.

In all ordinary cases this prescription will bring complete relief from suffering after a few doses, and it causes no depression. When the fever is high and headache severe, a single full dose of phenacetine, followed by these pills as required, has been the most satisfactory palliative treatment. Small repeated doses of calomel carried to mild purgation is beneficial at the beginning of almost all cases.

The Local Anesthetic Properties of Nirvanin.—

C. A. Elsberg, in the *New York Medical Journal* of January 13, 1900, says that nirvanin is a synthetic product obtained in the formation of orthoform. It was first described by Einhorn and Heinz. It is a white salt, has no odor, has a bitter taste, and is freely soluble in water. Luxenburger studied its effects upon animals and upon the human, coming to the conclusion that it was a good local anesthetic. It is said to be ten times less poisonous than cocaine; its solutions are said to be antiseptic and stable. The toxic experiments of Luxenburger were repeated by Elsberg and

confirmed by him. The solution deteriorates slowly when boiled. The anesthesia produced is immediate, comes on painlessly, lasting from fifteen to forty minutes. In an experience extending over eight months he has never seen a case of poisoning from this substance. The technique with nirvanin is the same as when Schleich's method is used. In painful affections, such as abscess and furuncles, infiltration should begin in the healthy tissue and gradually approach the inflamed areas.

Bromoform.—

W. L. Scoville, in *Pediatrics* of January 15, 1900, suggests the following for the administration of bromoform. It contains a minimum of alcohol, admits of accurate dosage, and has the merit of being very palatable:

℞	Bromoformi	gr. xxx.
	Tr. tolutani	ʒ j.
	Mucilaginis acaciæ	ʒ ij.
	Syrupi	ʒ iv.
	Aquæ menthæ viridis	q. s. ad f ʒ ij.

The mucilage is to be placed in a bottle, to which an equal volume of the syrup is added. The bromoform and tincture of tolu are then well shaken with this mixture. The remainder of the syrup and the mint water are then added and the whole agitated. This forms an emulsion which slowly deposits, but without separation of bromoform or tolu, and can be quickly rendered homogeneous at any time by agitation. Each teaspoonful of the mixture contains two drops of bromoform.

Iodoformogen.—

La Presse Médicale of January 6, 1900, discusses this substance editorially. It is admitted that while iodoform is a valuable local remedy, it is, because of its odor, not used as frequently as it should be. In city practice patients complain bitterly unless they are confined to their rooms or are in hospital. Iodoformogen is a combination of albumin and iodoform in the form of a granular powder. It is used in tubercular and chancroidal ulcerations, inflammation of the mucous membrane, as well as catarrhal inflammations. It is almost odorless, although a slight smell of iodoform is perceived at the moment the application is made, or when it it is removed. The powder is employed exactly as iodoform, and it has proven to be especially useful in cases of vaginitis, emulsified in glycerin. In cases of perineal rupture it is especially valuable in maintaining the parts aseptic after suture.

Aspirin, a Substitute for Sodium Salicylate.—

F. C. Floeckinger, in the *Medical News* of November 16, 1899, says that aspirin is a perfect substitute for salicylate of sodium. Its taste is agreeable, it is free from irritating effects, and causes no gastric disturbance. It does not cause the distressing tinnitus so common with salicylate of sodium. As it has no effect upon the stomach, it does not decrease the appetite, and it does not affect the heart unfavorably. He has experimented with the drug upon animals and finds that it is unaltered in the stomach, but when it reaches the alkaline juices in the intestines it is decomposed and absorbed. The class of cases in which aspirin is found to be useful are the same as those in which salicylate of sodium is used. It is especially valuable in acute articular rheumatism, and is particularly useful in diminishing the pain of inflammatory affections, wherever they occur.

Extension of the Leg in Tabetic Pain.—

A. H. Lindstrom, in the *Boston Medical and Surgical Journal* of January 11, 1900, describes a case of tabes in which for seven years preceding the advent of symptoms which enabled a diagnosis to be made a man suffered from excruciating pains in the calves of the legs. These came on at intervals, but of late had become so severe as to impair his health. Antirheumatics were tried in vain. They yielded promptly to a stretching of the sciatic nerve. This consisted in flexing the thigh at right angles with the trunk, or perhaps somewhat beyond this, and then gradually extending the leg at the knee. A few treatments of this character overcame the pain, but were followed by some numbness in the feet. The latter passed off, but the pains did not return with severity.

Arsenic and Iron in Chlorosis.—

Martinet, in *La Presse Médicale* of January 6, 1900, gives an exhaustive study, including the literature of the subject, on the treatment of chlorosis with iron and arsenic. He claims that the use of these two remedies is justified by experimental work and clinical observation. Both remedies are especially indicated in chlorosis, and particularly in those grave forms of anemia with rapid destruction of the corpuscular elements of the blood which sometimes accompany this disorder. The best method of administration, he thinks, is the protoxalate of iron and an arsenical water.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

A Sterilizer for Confinement Cases.—

F. A. Higgins (*Boston Medical and Surgical Journal*, Jan. 25, 1900) recognizes the practical difficulties in sterilizing instruments in the houses of patients. Under his direction was manufactured a covered box of nickel-plated sheet copper, fourteen inches long, five inches wide, and two and three-fourths inches deep. The cover fits inside the top, and on the bottom is an ordinary thin, perforated metal tray. Such a sterilizer can be used on top of an ordinary stove, or with an alcohol lamp. The lamp for using alcohol is a small metal box, two and a half by four and a half inches, and seven-eighths of an inch deep, fitted with a cover. This box is filled with asbestos, which is covered with wire gauze. This lamp will burn two ounces of alcohol in fifteen minutes. When the lamp is used the sterilizer is raised by inserting four small legs into the slots on the bottom of the box. The lamp will boil water in six minutes. The whole outfit weighs only three pounds. The instruments are placed in the sterilizer, which is carried in the instrument bag. These instruments consist of obstetric forceps with axis-traction rods, pelvimeter, scissors, long dressing forceps, long double hook, vulsellum, several artery forceps, scalpel, one long-handled perineum needle, several curved needles, long aspirating needle, glass curved douche tube, rubber catheter, long gum elastic catheter.

Mortality from Fibroids.—

F. H. Champnes, in *The Lancet* of January 20, 1900, in discussing the natural history of uterine fibroids, says the mortality is to be considered from two standpoints: first, those which are not operated, and secondly, those which are. The medical post-mortem notes of St. Bartholomew's Hospital, from 1867 to 1899, show that examination was made of the bodies of 1398 women of 30 years of age or over. Uterine fibroids were noted in seventy-four cases, or just over five per cent. A study of these records shows that the mortality of the seventy-four cases apart from operation was only 4.05 per cent. In only three of the seventy-four cases could death be attributed directly to the uterine tumor. The surgical post-mortem examinations cover a period from 1885 to 1899 and state the results of the examination of the bodies of 462 women upwards of 30 years of age. The number of fibroids noted in these was sixty-seven. In fifteen of the cases death was due, directly or indi-

rectly, to the fibroids. In the ward for diseases of women in the same hospital, out of 547 cases of uterine fibroids there were twenty-nine deaths, all of which, with one exception, followed operation.

The reporter remarks that the classification of a death after hysterectomy is a matter for debate and must depend upon the practice of the surgeon. If he operates when life is not threatened, then a death is to be credited to the operation and not to the fibroid. If he operates only when life is threatened, then the death is to be attributed in large part to the fibroid. Is is apparent, therefore, that the percentages of mortality after operation are not a true test, either of the skill of the operator or the correctness of his practice. We cannot compare the operation for ovarian and fibroid tumors; the former almost invariably are fatal, while the latter are rarely so. As to whether an operation should be undertaken in uterine fibroids depends upon the conditions in each case. Those needs which urge operation in fibroids are pressure upon the kidneys, a long-continued and severe hemorrhage, and rapid growth. Mere size may or may not be an indication for operation. A cystic fibroid should be treated like an ovarian tumor and removed.

Conditions which Govern Success in the Sanger Cæsarian Section.—

E. Reynolds, in *Obstetrics* for January, 1900, gives a study of his personal experience in fourteen cases in which the operation was performed without mortality. The high fetal mortality in many obstetric procedures he thinks justifies the resort to section more frequently than is now the case. The mortality is small in selected cases—that is, those in which the mother's vitality has not been seriously impaired by septic infection, prolonged labor, or complicating disease. Where such conditions exist, which he terms neglected cases, craniotomy should unhesitatingly be performed, or, where possible, symphyseotomy. When the mother is in good condition there are no serious complications, no infection, and the patient is not exhausted by long labor or by prolonged efforts at delivery by forceps. The Cæsarian section is an operation that should be resorted to unhesitatingly at term whenever an intrapelvic delivery would be fatal to the child.

Congenital Lateral Curvature of the Spine.—

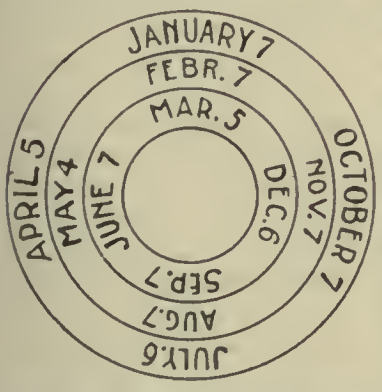
H. L. Taylor, in *Pediatrics* of January 15, 1900, reports a case of congenital lateral curvature of the spine. The rarity of this condition in early infancy is shown by the statistics of Ketch, who

found in 229 cases only forty-two before the seventh year. Eulenberger found five cases under one year of age in 1000. The writer has seen two cases of lateral curvature in infants under one year in the Hospital for the Ruptured and Crippled. The first was a rachitic girl of nine months. The convexity of the curve was to the left in the dorsal region. The mother stated that the deformity was first noticed at the age of three months. The second case was a girl of three months, with a duration of two weeks. In the second child no signs of rickets were present. The deformity was probably congenital and due to some malposition *in utero*.

The prognosis in congenital and early rachitic cases is critical. If untreated, the deformity usually increases and may become very severe. Manual correction should be employed several times daily and the child carried on the arm of the side toward which the spine bends. If necessary a form may be used with correcting pads, and massage should be employed daily.

An Obstetric Tricyclic Calendar.—

W. L. Kantor, in the *Philadelphia Medical Journal* of December 30, 1899, submits a calendar which has the advantage of being compact, simple, and portable. It may be copied on the reverse side of an ordinary card and be carried in the vest pocket.



It should be used as follows: The date of the last menstruation being given, add the numeral on the right hand of the month in which it occurred to the corresponding date of the month immediately following on the same circle, and you obtain the exact day on which labor should take place—*e.g.*, last menstruation, December 17; labor, September 17 + 6 = September 23.

Enlarged Liver in Rickets.—

R. T. Taylor, in *Pediatrics* of January 15, 1900, describes the case of a child two and a half years old with a negative family history. There was a history of indigestion during the child's first year. The child walked and talked at one year. When one year and nine months old the child had a sudden attack of fever, vomit-

ing, and diarrhea and collapse. The attack was transient, but the child was not able to stand, walk, or sit up after it. A diagnosis of rickets was made. At this time the liver began progressively to enlarge, and the typical symptoms of rickets were present; the child was plump, but flabby and anemic, with a sallow skin. The right side of the abdomen was entirely filled by the liver and measured twenty-two inches in circumference. The spleen was palpable. The corpuscular elements of the blood were normal, with the exception of some increase in the white corpuscles. Iodides and nitrohydrochloric acid were without benefit, but under inunctions of mercury the liver rapidly decreased in size and the general condition changed for the better. The writer is inclined to the view that the trouble was luetic in character, but the history was negative upon this point.

FORENSIC MEDICINE.

Practical Difficulties Attending the Defense of Insanity in Criminal Cases.—

The Lancet of December 9, 1899, discusses editorially a recent criminal trial in England, which illustrates some of the practical difficulties in dealing with insane criminals. The case referred to was that of a man usually of a quiet disposition, but who, according to the evidence, was affected by a very small amount of liquor. He cut the throat of his wife during an attack of delirium tremens from which he afterward recovered. The man was indicted for wounding with intent to murder, and the jury found him guilty, but added that at the time the man committed the act he was insane. The judge passed the only sentence in his power, namely, that the prisoner should be detained during her majesty's pleasure, adding, presumably to satisfy those who know that this measure means life-long incarceration at Broadmoor, that he would make representations in order that the incarceration might not be a long one.

In commenting on the above *The Lancet* says that such cases are inadequately provided for. The verdict that an insane person has committed an act with a felonious attempt seems like a contradiction in terms, and a man who has recovered from an attack of insanity which may never recur is hardly a fitting inmate for a lunatic asylum. At the same time he may, if at liberty, have a recurrence of delirium tremens from which he has already suffered, and at the same time be an improper subject for restraint as a habitual drunkard, nor can he be confined as an ordinary criminal.

The anomaly pointed out by *The Lancet* in these cases is painfully apparent in the administration of the law in all Anglo-Saxon countries. In the case cited the cause of the mental disturbance seemed to be the use of alcohol. There is no doubt that this intoxicant, as well as other drugs, may completely obtund the mental faculties and the reasoning powers for the time being. Legislators have attempted to meet this by the enactment of a statute to the effect that a man could not plead drunkenness as an excuse for crime, and the theory is distinctly advanced in this light, that in a case such as the above, as the individual had voluntarily placed himself in this mental condition, he was responsible for acts committed while in such state. This theory of the law in effect makes drunkenness the crime, and it very illogically allows a man to make a defense of insanity based upon a progressive disease of the brain, even though the latter were caused by the chronic ingestion of alcohol, not seeming to recognize the fact that acute and chronic alcohol intoxication are both "voluntary."

The Relation of Pelvic Disturbances to Insanity and Crime.—

Macnaughton-Jones, in his valedictory address before the British Gynecological Society (*Lancet*, Jan. 20, 1900), spoke of the correlation between sexual function and insanity and crime. His conclusions are as follows:

1. The correlation of insanity and disordered sexual function arising out of affections of the generative organs is a factor to be taken into consideration in the treatment of the mentally afflicted.

2. Where there is ground for the suspicion that some physical condition of the uterus or adnexa existed which might produce or aggravate the mental affection, a careful examination, under an anesthetic if necessary, should be made.

3. In the investigation of criminal acts committed by women, either during the menopause or while the menstrual function is either active or suppressed, due weight should be given to the influence exerted by its irregularity or abeyance on the mind of the woman; in doing this her previous history and temperament should be considered.

4. The special dangers of the climacteric period should be remembered, and the symptoms indicative of threatening climacteric mania, depression of spirits, attacks of hysteria, occasional hallucinations, delusions with regard to relations, unjust dislikes, unfounded apprehensions of some grave crime committed or injury inflicted on them, and suicidal tendencies.

5. In operations on the generative organs of women there is a greater predisposition to mental disturbance than after other operative procedures.

6. Women who have been previously insane are predisposed to a relapse by the development of disease in their sexual organs, and especially to such recurrence of insanity after operation on these organs. Under all such conditions, and in the face of these warnings, the greatest supervision and care are required to anticipate the insane impulse and to prevent suicide or crime in the case of women who manifest symptoms that are due to a correlation between disorders of sexual organs and mental instability.

Ptomaine Poisoning.—

W. P. Cones, in the *Boston Medical and Surgical Journal* of January 25, 1900, reports the case of a man aged 26 who had been well and strong, with the exception of a rheumatic attack seven years before. While at work at his ordinary occupation he suddenly fell forward, striking his face against the floor and breaking off two front teeth. He had left home early that morning feeling well, taking with him his luncheon, which consisted of chicken sandwich and cocoanut pie. This was supplemented by sardines obtained at his place of work. At 7 P.M. the same evening, after his fall at his place of business, he was found at his home in a condition of collapse. The extremities were cold and there was no pulse at the wrist. The patient was semiconscious. Examination of the lungs and abdomen was negative. The heart's action was very weak; there was pain and depression in the precordial region. Artificial heat was employed, and he was given strychnine, digitalis, and later some morphine. Reaction gradually set in. The following morning he was comfortable, with a temperature of 100° and pulse 100. The reporter is of the opinion that the case was one of ptomaine poisoning, and it acquires its chief medicolegal interest from the sudden onset of the disorder.

Neurasthenia and Divorce.—

Until within recent times France has had no general law of divorce. Marriages were only annulled by the king. With the establishment of the republic an adequate divorce law has been passed, which has been taken advantage of by numerous residents of France to sever matrimonial alliances which serve to unite people long separated. From the strict rule of no divorce the French courts seem to be swinging toward the opposite extreme of granting divorce upon apparently insufficient grounds. This is

shown in a recent case reported by *La Journal de Médecine* of January 14, 1900, in which an action was brought by a woman on the ground of neurasthenia in the husband. This led him to be violent in his conduct and to use coarse language, which was held on the part of the plaintiff to constitute *des injuries graves*, the ground for French divorce. The words above quoted are evidently synonymous with that "extreme and repeated cruelty" which constitutes the ground for a divorce in the majority of our States. There is evidently a wide variation in the manner in which the law is enforced, the judge being the only one to determine what constitutes extreme and repeated cruelty. The French court rejected the appeal, on the ground that neurasthenia not only excused the *vivacites* of the husband, but also was an additional charge upon the devotion of the wife. In this view the French courts are following Anglo-Saxon jurisprudence, which has long maintained that physical and mental infirmity is no ground for a divorce, but on the contrary, in many cases, is almost a bar.

Amputation Stumps.—

An editorial in the *Railway Surgeon* of January 9, 1900, gives some interesting facts regarding the changes which take place in stumps after amputations. Ulcerated, painful, or deformed stumps are a not infrequent cause of malpractice suits, and it is a fairly well-founded belief in the mind of the laity, which is reflected somewhat in professional opinion, that a defective stump is in some way due to want of skill in the surgeon making the amputation. Stumps may alter in shape from changes in the soft parts or bones. The first cause, muscular atrophy, is due to an insufficient use of the stump. There are many changes which produce bad stumps, one of the most important being a growth of the bone, this lengthening taking place where amputations have been made in young persons; eventually it presses upon the cicatrix and produces what is known as a conical stump. Of course these cases of disturbances in stumps after amputation are treated of in modern works on surgery, but sufficient emphasis is not laid upon the fact that flaps, no matter how well made, and bones amply protected by soft parts, may so alter their relation by pathological processes as to produce a painful and useless stump through no fault of the operator.

An Interesting Suit.—

The *Medical News* of December 23, 1899, has an account of a very interesting suit brought by Dr. B. L. Robinson, of McLean, New York, against one E. G. Chalmers, of Courtland. The latter

is a reputed millionaire, and the services for which suit was brought were claimed to be worth $10,000. The case was settled for $900. It was claimed by the attorneys for the patient that the charge made by the physician was nearly a thousand dollars a visit. It is said that in September, 1898, Mr. Chalmers "began to commit suicide" by cutting at his throat with a razor. When he had seriously wounded himself he repented and called for a physician. Dr. Robinson responded, and performed some very difficult surgical work, with the result that the patient recovered. The doctor based his charge of $10,000 on the ground that the life of the irresolute suicide was worth that amount.

The above case raises the question as to whether medical services are worth more to a millionaire than they are to a poor person. The law in most States has established a limit, beyond which jurors may not go in awarding damages for loss of life. In none of these cases have we seen it pleaded that the life of a rich man was worth more than the life of a poor man. The above case is further complicated by the fact that the patient had just attempted to take his own life. Even though he had repented of his rash act and desired to live, can it be justly argued that a man's life is as valuable who has just made an attempt at suicide as one who has not, even though he be a rich man?

What Constitutes an Accident?—

In the *Medical Record* of December 9, 1899, it is stated that a man died not long ago in Vermont in consequence of perforation of the intestines by sharp fragments of some indigestible material swallowed with the food. He was the holder of an accident policy insuring him according to the usual formula against "bodily injury sustained through external violence and accidental means." The company refused to pay on the ground that the cause of the man's death was not an accident, but the court decided that death was accidental within the meaning of the policy. In New York State it has been decided that the taking of poison by mistake is not an accident; in a similar case in Illinois the courts have ruled exactly opposite.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

INGUINAL HERNIA; COMPARATIVE RESULTS OF RADICAL TREATMENT BY OPERATION, AND TREATMENT BY INJECTION; REPORT OF CASES.[1]

BY THOS. P. SCULLY, M.D., ROME, N. Y.,
Surgeon to the Rome Hospital.

It is interesting to look up the literature of inguinal hernia for the last twenty years, a period including a few years preceding and during the antiseptic surgical era, and the present time, which may be called the aseptic era of surgery. During this time the views of some of the most prominent surgeons have changed radically, their methods of operating have altered, the results have shown a wonderful improvement. As an illustration of how opinions have changed regarding results by operation, Dr. Wier read an article before this society in 1888, on the cure of hernia by the Heaton method, and by radical operation. He quoted statistics showing that in non-incarcerated cases of inguinal hernia over 50 per cent were failures. Dr. De Garmo was quoted as stating that he had treated cases successfully by the Heaton method that had recurred after the radical open operation. Dr. Bull, of New York City, in an article written in 1890, reports 134 operations, and of this number 38 per cent relapsed. At that time he came to the conclusion that if allowed sufficient time most cases would relapse, and was further of the opinion that there was little prospect of radically curing any form of hernia. Billroth up to 1890 showed a mortality of 6 per cent and 32 per cent of relapses. Wyeth in his work on surgery, 1887, says: "When an inguinal hernia cannot be retained by a truss operative interference is indicated. Of the various pro-

[1] Read at the meeting of the Medical Society of the State of New York, 1900.

cedures which have been introduced, that known as Heaton's operation is the simplest in execution, involves less danger and annoyance, and offers fully as great a prospect of success." The American Text-book of Surgery, 1892, says that about 50 per cent of the cases operated on are permanently cured.

Dr. W. B. Cooley states that of 134 cases operated on by Dr. Bull and himself prior to 1890, only 49 healed by primary union, and 40 per cent of the 134 relapsed within two years. In 1893 Dr. G. R. Fowler stated that previous to 1890 only about 50 per cent of those operated on were cured.

In 1895 De Garmo read a paper before the New York Academy of Medicine on amputation of omentum in operations for hernia, and, referring to a paper read in 1887, he stated that recurrences of hernia were the rule instead of the exception at that time. He urged the conservative treatment by truss or injection.

My object in quoting as I have the above named surgeons is not to criticize their work, but simply to show by comparison how from time to time the opinions of our best operators change regarding certain operations. At the present time many of those surgeons whose names have been quoted above are just as enthusiastic in their claims of high percentage of cures and low percentage of failures by the more recent method of operating as they were dubious about the radical cure of hernia ten or fifteen years ago. In June, 1897, De Garmo, in the *Virginia Medical Semi-Monthly*, reported 250 cases operated on by the Bassini method, with no deaths. De Garmo is now of the opinion that fully 95 per cent of the cases operated on will be cured. In the *Annals of Surgery* for March, 1897, Cooley, in an article on hernia, presented a report of 360 cases operated on with only one death, which is certainly a remarkable showing. Three hundred of those cases were operated on according to the Bassini method by Cooley himself, with one death and three relapses; 97 per cent of these cases healed by primary union. Roux, of Switzerland, reports that of 1398 cases of hernia operated on, only five deaths occurred. Broca, of Paris, up to 1897 had operated on 1064 cases with a mortality of nine. Barker in 1897 reported 200 operations for cure of hernia, with three deaths.

The hopelessness of ten to fifteen years ago has given way to a feeling of confidence in the radical cure of hernia by operation. This hopeful feeling is justified by results. Statistics of thousands of cases operated on during the last ten years show a very low mortality, probably not greater than one per cent, and the

relapses do not appear to be above one per cent. Of the various methods that are in vogue, the one known as the Bassini method seems to give the best results. Why this operation should be called the Bassini method does not seem clear to me, as the procedure described by Bassini in 1890 was adopted by H. O. Marcy, of Boston, prior to 1881, some seven years previous to the time Bassini claims to have performed the first operation according to this method. Marcy advocated and used buried sutures of catgut and sutures of tendons of caribou. A careful study of the descriptions shows that the procedures of Bassini and Marcy are practically identical. Marcy's paper was presented to the International Medical Congress in 1881, and further communications at the 1887 and 1889 meetings of the American Medical Association.

The method of operating for cure of hernia by Kocher, of Bern, Switzerland, and described by J. Buchannan in the *Philadelphia Medical Journal* of June 25, 1898, is without doubt the acme of simplicity, and in non-incarcerated inguinal hernia of recent date is a method that should be adopted both in the interest of patient and surgeon. Whether to attribute the high percentage of cures as reported at the present time to the improved technique or the aseptic precautions adopted is a question. I am of the opinion that the splendid results reported recently could not be brought about by technique alone, and we must give the aseptic precautions taken as much if not more credit. It is generally conceded that in order to get a permanent cure we must not depend on cicatricial tissue acting as a plug or as an aid in closing the inguinal canal. To avoid cicatricial tissue we must have union by first intention; this will take place only under the strictest aseptic precautions. While some of the statistics of recent date are reported by surgeons who may perhaps be too sanguine, still there seems to be no question that we are justified in holding out to those afflicted with hernia more hope of a cure by operation than could have been done by the surgeons of ten or twenty years ago. My experience is that in order to have the best results we should be very thorough in every particular as to technique. Every portion of abnormal tissue in the inguinal canal must be removed; this includes every piece of adherent sac or omentum. Kangaroo tendon is the best suture material for closing the canals, but if it cannot be had chromicized catgut may be used. In tying the sac care should be exercised to prevent much puckering of the peritoneum as it recedes. The patient should be kept in bed at least three weeks, and four weeks would be better. Trusses should not be put on after an operation.

Regarding the cure of inguinal hernia by injection, much may be said for and against it. There is among the laity an old prejudice against being operated on for hernia, and a promise of cure by other means is readily accepted. While to-day we can say to those afflicted that we can cure more than 90 per cent of inguinal herniæ by operating, yet this condition has not prevailed sufficiently long for the general public to be aware of the fact. They are being educated gradually in this direction, and it will not be many years before those suffering from hernia will seek a cure by operation, in preference to wearing an ever-torturing truss. There are those who desire some relief from the distressing condition, and if they cannot be induced to submit to an operation, then we can use in a large number of cases an injection which, if used properly in conjunction with a well fitting truss, will give in many cases great relief, if not a permanent cure. The fact must not be overlooked that a large percentage of those having inguinal hernia are working people, and the loss of three or four weeks' time is an important matter. By the injection method no time need be lost. You can treat the patient, and in an hour he can be at his work. Injections for this purpose are not new, but for those not acquainted with the method I will give a brief explanation. I use an injection differing somewhat from that employed by Heaton and his followers. Heaton's formula was fluid extract white oak bark, thickened by the addition of a small quantity of a solid extract of white oak bark, and to every twenty minims a half-grain of morphine was added. I use the following formula:

Fluid extract quercus alba	1½ ounces.
Solid extract quercus alba	1½ drachms.
Carbolic acid crystals	2 drachms.
Iodine resublimed	2 drachms.
Morphine sulphate	10 grains.

Mix the carbolic acid and iodine thoroughly in a mortar, add the other ingredients, and triturate thoroughly.

Twenty minims of the above is a maximum quantity for one injection. Before using an injection a truss that will retain the hernia perfectly must be fitted to the patient; without a perfectly fitting truss nothing can be accomplished, and the fluid should not be used. By a perfect fitting truss is meant a truss that will retain the hernia in any position the patient may assume. Having secured this, prepare the patient by cleaning the lower part of the abdomen thoroughly with soap, warm water, and brush. If there is much hair covering the inguinal canal it should be shaved. After having cleaned the abdomen thoroughly wash the parts over the inguinal

canal with alcohol and ether. The syringe needle should be thoroughly clean and kept clean; in fact, every precaution should be taken to protect the patient from infection. The needle should be a stout one, 1½ to 2 inches long. Place the patient in a recumbent position. Having reduced the hernia, the index-finger is placed in the inguinal canal by invaginating the skin over the external ring and pushing the finger up the canal until the tip reaches the internal ring. By feeling over the site of the internal ring the tip of the finger in the canal can be felt, and the needle should be inserted at this point, directly over the finger-tip, and pushed down quickly until it passes the end of the finger. Three to five minims should then be injected slowly, and as the finger is withdrawn slowly the needle is made to follow it for about half an inch, during which time the fluid is still injected slowly, and when the twenty minims has been injected the needle should be withdrawn suddenly to avoid depositing any of the fluid in the subcutaneous tissue; if the latter occurs it causes intense burning for a short time. The truss should be placed in position immediately, and the patient should lie down for about half an hour. If there is much pain after the injection, the placing of a hot-water bag over the site of the injection will soon ease the pain. The injection should be repeated once a week for three or four weeks, when if the hernia does not come down after having taken the truss off, and having tested it by the patient coughing or stooping, you need give no more injections. The truss should be worn for at least four weeks longer, when if the patient desires it may be left off. In most cases it is well to advise a truss to be worn for from four to six months; one with a large soft pad is preferable. Many patients will not go without a truss even though they know they can, as they feel more secure with a truss on.

During the last eight years I have treated by injection 148 cases, as follows: Adults, 104; children, 16; double hernia, 28.

Of the above number of cases of single hernia in adults sixty-five were under 50 years of age, and thirty-nine over 50 years of age. Under 50 years of age hernia occurred on the right side thirty times, and on the left side thirty-five times; over 50 years of age hernia occurred on the right side twenty-nine times, and on the left side ten times. Double inguinal hernia appeared twenty times under 50 years of age, and eight times over 50 years of age. The number of cases of hernia in children under 10 years of age was sixteen, all on the right side. Of the total number treated by injection (148), none of the double herniæ were cured, but were all more or less ben-

efited—that is, the inguinal canal was reduced in caliber by the new connective tissue that had been formed through the inflammation produced by the fluid injected, and in that way the herniæ were retained by the truss with more comfort to the patients. Of the 120 cases of single hernia—104 adults and 16 children—treated by injection, 58, or 48 per cent, were successful one year from date of last injection. Two years from date of last injection, of the above 58 cases 40 were traced; 32, or 26 per cent, of the whole were not wearing a truss. Eight had been wearing a truss for periods of a few months to a year. Of the remaining 18 I am uninformed. Of the 62 cases not cured, all were more or less benefited. Of the 16 children treated, who were included in the 58 reported cured, all proved a success. None of the children had more than two injections, and they did not exceed eight drops at one time. I wish to state that of the 58 cases reported cured at the end of one year from last injection, the major portion of them were of recent origin and were not difficult to retain with a truss, and were cases in which the canal had not undergone any very great change. On the other hand, all the cases in which I failed to effect a cure were in those that gave a history of several years' standing, and many of them experienced considerable difficulty in retaining the hernia with a truss.

In conclusion I would say that in regard to recent inguinal hernia that can be retained easily with a truss, we can say to those seeking relief that they can probably be cured by injection. To those who have a hernia of long standing and retained with difficulty we cannot promise a cure. We can relieve them in many cases, but the greater number will be failures. On the other hand, we can say to them that no matter of how long standing the hernia may be, we can to-day cure over 95 per cent of them by an operation; and I would always encourage an operation in any case, notwithstanding the fact that I have cured many cases by injection and will probably continue treating suitable cases in that way, not from choice, but because of the fact that many people will not submit to an operation.

Dr. A. M. Phelps, of New York, said he had listened to the paper with a great deal of interest, but under all the operations described he thought it would be found that the percentage of relapses was far too small. No operation could be said to have been thoroughly tested until five or six or more years had elapsed, and he was afraid that before long the profession would be calling out against the methods of Bassini and Marcy as it had previously called

out against other operations, and for the same reason, viz., the liability to relapse. Dr. Phelps then described a method which he had introduced some years ago into the New York City Hospital, which he remarked had been made the dumping ground of a large number of other hospitals. His operation consists in closing off the sac with a continued suture of fine silver wire, and fortifying the entire inguinal canal with loops of silver wire matted together, placed over the transversalis fascia, and underneath all the muscles. This procedure perfectly obliterates the inguinal canal, and the wire becoming encysted prevents the stretching of scar tissue. In a series of over 180 cases, 46 of which were relapsed, that he had treated in this way at the City Hospital, none had relapsed. He could not say positively that none of them would relapse until about eight years from now, when he would make a report on as many of them as could be traced.

ENZYMES AND IMMUNITY.[1]

BY CHAS. T. McCLINTOCK, M.D., PH.D., DETROIT.

The problems of immunity are the most fundamental of all the problems in curative medicine. We are forever besieged by innumerable hordes of lower organisms which will, if they can, destroy us. Soon or late, alive or dead, they triumph and literally destroy this body of ours. During life and fair health we hold them off, or, as we say, are immune to their attacks. What gives this immunity? On what physical or chemical conditions is it dependent? Why is it present at one age, absent at another? Sufficient for all needs to-day and wholly inadequate another time?

These, I repeat, are the most fundamental, most important of all questions in therapy. Anything like a satisfactory explanation of all the phenomena of immunity is as yet quite impossible. Of this we are sure, instead of being a simple somewhat dependent on some one thing or condition, immunity is a most complex affair. The immunity to smallpox gives not the slightest protection against tuberculosis or cholera. The heel of Achilles is always exposed. Be you ever so strong there is always some disease germ to which you are susceptible.

In the germ-caused diseases the phenomena are those of a combat, a struggle for existence between two opposing forces. On the one side disease germs, insatiate, at times all but innumerable, eating, devouring, poisoning—a pitiless foe. Opposed are the body tissues, normally well equipped for defense—barrier walls of dead cells, impenetrable membranes—a marvelous ability to repair breaches—a soldiery instantly available—poison and germ-destroying agents, eliminative organs, reserve food, and defensive powers.

As the one or the other of these forces is stronger we have immunity or susceptibility. If the tissues are at the outset susceptible the bacteria grow—and yet it may be recovery takes place. This means that an immunity has been developed—in some way the tissues have gained a power they lacked at first.

We speak of many of the contagious diseases as being self-limited. In a sense this is not true. The bacteria never quit until forced to. Pasteur supposed that their multiplication was stopped on account of the exhaustion of some necessary food. We know that this is not the correct explanation. They cease only when the body is able to destroy them or their products. And if we are to

[1] Read before the Mississippi Valley Medical Association.

give any essential aid it must be by assisting to develop this immunity.

What are the agents for attack and defense in this struggle we call disease? For several years the opinion has been gaining ground that they are, frequently at least, enzymes, unorganized ferments. Matter as it occurs in living things is soluble or insoluble, liquid or more or less solid, according to the needs of the organism. This change in condition is effected, in so far as we know, solely by enzymes. It is probable that every living cell has to some extent this power, to liquefy, to solidify certain kinds of matter.

We are acquainted with a few of the enzymes, while it is probable that there are many kinds of them. On account of the nature of their food the lower plants must of necessity be strong enzyme-producers. We do find among them those that readily digest cellulose, as manifested in the decay of wood, horn and hair, the stone-like coverings of many seeds and nuts — digestion that is impossible for us. Most of them can rapidly digest proteids and carbohydrates. For some time I have been studying certain of the bacteria with the view of finding a better proteolytic ferment than pepsin or pancreatin. You will recall that the most powerful diastase we have is obtained from one of the lower forms of fungi.

In growing large quantities of diphtheria germs for the production of toxin, we notice occasionally that there is a vigorous growth of the germs; the surface is covered with a scum of them, and on the bottom of the flask there is a thick layer; yet in a day or two they wholly disappear. Examining the flask we find that it is contaminated; there is a foreign germ present, and this has produced a ferment which digests and literally eats up the bodies of the diphtheria germs.

Watching the growth of other germs, in particular the germ of green pus, we note that without any contamination the germs disappear—a case of autodigestion, *i.e.*, the germ produces a ferment, and in turn the ferment digests the germ, just as after death the stomach will digest itself. The failure of the living stomach to digest itself suggests a possible explanation for the difference between pathogenic and non-pathogenic bacteria. This — the non-pathogenic bacteria produce enzymes which act only on dead protoplasm, whereas the pathogenic product can digest living protoplasm, or, if not, it has the power first to kill, then to digest.

The similarity of many of the phenomena of disease, and of disease resistance to enzyme action, has been noted by a number of observers. In general, toxins and antitoxins in their behavior to

heat, to precipitation, to dialysis, drying, and the like, are much as the enzymes. Note the similarity of the consolidation in pneumonia to the clotting of blood, or to the coagulation of milk by rennin, and the resolution—how like the digestion of proteids.

In a preliminary investigation I find that pepsin, aside from the action of HCl, will kill a number of species of bacteria, but fails on some. I am strongly inclined to believe that the disinfecting power of the stomach is due far more to the ferments present than to the hydrochloric acid. The diastases destroy some bacteria; the neutral ferment, bromelin, some. Löew and Emmerich report that two cubic centimeters of a solution of an enzyme obtained from the bacillus of green pus will kill two and a half million virulent anthrax germs in five minutes. According to these authors this enzyme rapidly destroys large numbers of the germ of typhoid, diphtheria, plague, etc.

That one germ or its products can aid or hinder the work of other germs has long been known, and it has been the dream of many workers that we would ultimately fight disease germs with other germs or their products. It appears as if this dream is about to be fulfilled. To this later.

If we inject large numbers of many of the non-pathogenic bacteria into the veins of a healthy animal, after some hours we are unable to find a trace of them, unless it be that they are of the spore-producing kind. Not only have they been killed, they have disappeared; nor are they in hiding — they are gone, dissolved, digested, if you will. Your patient recovers from peritonitis; for the most part the millions of germs present during the disease are not excreted, although some of them are; the germs are dissolved. In the cold abscess the tubercle germs producing it often all but disappear.

We have an animal that has been artificially immunized to cholera or typhoid. We inject some of the actively motile germs into the abdominal cavity. After a few minutes we kill the animal, and on examining the peritoneal fluid we find that the bacteria have ceased to move; they are swollen and distorted; their cell membrane has been altered so that they stick together. If the exposure has been long enough they are dead. With certain limitations all of the phenomena are produced when a drop or so of the blood-serum is added to cultures in test-tubes. There is a something in the blood and fluids of the animal that quickly affects the germs. These agglutinins, as they have been named, act like enzymes, and are by most observers believed to be such. The Widal test is the most widely known of these phenomena.

Draw a little blood from a calf, then vaccinate the calf. Wait two weeks and again draw some blood. With the blood-serum obtained from the bleedings mix some active vaccine virus. After a bit vaccinate a healthy child on both arms, using one of the samples of vaccine for each arm. It will be found that the vaccine mixed with the serum from the vaccinated calf is inert; that with the serum of the same calf before vaccination is active. Repeat this experiment with blood obtained from horses, hogs, monkeys, or men —the result is always the same. The blood of any of these animals before they are vaccinated has no ill effect on vaccine virus, whereas after vaccination it rapidly kills it. The blood of men and animals who have recovered from smallpox contains this antivirulent substance—the power to kill vaccine. All that we know leads us to believe that recovery from smallpox or vaccination is due to the development of this substance.

We vaccinate a child. The vaccine organism, whatever it may be, multiplies rapidly, the phenomena of the disease appear, but after about a week these anti-bodies begin to appear in the blood. Whether they are produced by the body, by the vaccine organism, or by the two together, we cannot say—but come they do, and in turn kill the vaccine organism, and we say the disease is self-limited. Note the similarity here to what takes place in the flask containing the green pus-germs. The germs grow, produce an enzyme, which in turn destroys the germ that produced it. This antivirulent substance found in the blood of the immune to vaccine or smallpox seems to be an enzyme related to the diastases. Compared with the antitoxins it is a very stable body, resisting heat, sunlight, putrefaction, time, to a remarkable degree. It has been demonstrated in the blood of a man who had recovered fifty years before from smallpox.

After looking over the evidence, which is too voluminous to be more than mentioned here, it appears to me to be fairly well proved that the body does destroy disease germs and organisms with enzymes.

But how about toxins? The germ poison? The evidence is not so conclusive, although there are many facts indicating the probable truth of the enzyme explanation.

Grind together some tetanus toxin and portions of the brain or upper cord of a susceptible animal. The mixture soon loses its toxicity, and even becomes slightly antitoxic.

Emmerich and Löew give a number of experiments to show that the green pus enzyme — Pyocyanase, as they call it — not only

destroys germs but also their toxin, both in the test-tube and in the body.

Now the more important question. For argument's sake admit that the body does destroy germs and their poisons with enzymes, that the enzymes are the agents of immunity. Can we produce these enzymes outside the body and lend them where there is need? Can we substitute the flask and test-tube for the horse in producing antitoxin? It seems to me to be probable, although not yet proved.

The published results of Emmerich and Löew are very noteworthy. They seem to show that if the green pus enzyme is injected into the body it is quickly destroyed, but if it is first made to unite with blood or with spleen pulp a molecule is produced that can circulate in the body for a time, at least long enough to attack bacteria or their toxins. With such a substance they report curative results in several of the bacterial diseases.

I have gone over a part of their work. My results, however, have had thus far to do with bacteria in test-tubes only.

But whatever the results, I feel sure we are on the right track. We are studying the disease-producing organisms, learning the agents with which they work. Little by little we are learning how the tissues combat these disease-producing agents. When we know these things then will we be ready to give intelligent aid.

OBSERVATIONS ON THE RECENT PATHOLOGY OF ACUTE LOBAR PNEUMONIA AS A BASIS FOR TREATMENT.[1]

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Acute lobar or fibrinous pneumonia has been definitely placed among the infectious diseases. Modern research has advanced so far as to have demonstrated its pathogenic microbe with almost complete satisfaction. Only a little is lacking to prove that the diplococcus lanceolatus of Weichselbaum and Fränkel is responsible for the inception of the disease and for its continued manifestations in the system. It is known that the coccus is present in a great majority of cases in which careful microscopical examinations are made, and it has been further shown that when injected as a pure culture into the lungs of lower animals it usually gives rise to hepatization of the pulmonary structure.

For the reason that it is not invariably present in the pneumonic lung, and that its introduction does not always cause a reproduction of the disease, it does not fulfil the requirements of a pathogenic microbe as conclusively, for example, as does the anthrax bacillus, the spirillum of relapsing fever, or Koch's tubercle bacillus. As Pye-Smith has justly observed (Allbutt's System of Medicine, vol. vi) other preliminary postulates also appear to have been somewhat neglected in this connection. Positive proof of pathogenecity requires that the microbe should be "specific"—that is, should be a good botanical specimen possessed of definite and constant characters—so that it can invariably be recognized beyond dispute. The morphology of the pneumococcus is admitted to be illusory. It varies in different periods of its growth and under different conditions, and may almost arbitrarily be described as a micrococcus, a diplococcus, or a streptococcus. It has also been variously described as being oval, or lancet-shaped, or as a bacillus. Sometimes it is encapsulated, sometimes not. The shapes assumed under different methods of cultivation are not always decisive, nor are the reactions to staining agents. Another confusing element to the seeker after light on this subject is the fact that the variety of pneumonia is not always carefully specified by the writer.

Pneumonia is not so well defined a term as phthisis pulmonalis, for example. We understand by it an "inflammation of the lungs," but this might be lobular pneumonia or bronchopneumonia, pyo-

[1] Read before the Medical Society of the State of New York, Jan. 30, 1900.

genic septic pneumonia, fibrous or interstitial pneumonia, or finally, croupous lobar pneumonia. The microbe of Fränkel appears to be very commonly present in all of these conditions, while not invariably present in one. On the other hand, it has been shown with great clearness by competent observers that hepatization of the lungs may be produced by various other organisms, viz., the bacillus coli commune, the Klebs-Loeffler diphtheria bacillus, the microbe of typhoid fever, the bacillus erysipelatus, and by various streptococci and staphylococci. In a study of an epidemic of what appeared to be croupous pneumonia at Middleborough, England, in 1889, Klein found the diplococcus replaced by an unknown bacillus in every case—probably the bacillus botulinus of Ermengem.

It must be confessed that while Fränkel's organisn is undoubtedly largely concerned in the natural history of acute fibrinous pneumonia, and possibly as valuable a meaus of diagnosis as Koch's vibrio in Asiatic cholera, we cannot yet pin our faith to it as the one invariable cause of the disease, nor are we in a position, it seems to the author, to base a system of remedial medication upon its presence or absence in suspected cases. It is fairly well established that these microbes are always present in the mouth, throat, and larger bronchial tubes.

Recent experiments by Bezancon and Griffon (*Société des Hôpitaux de Paris*) showed the presence of Fränkel's diplococcus in the tonsillar secretions of every one of forty persons living under most diverse conditions. Thus, while it is possible for the germs to reach the lungs through the blood-vessels or lymphatics, it must be taken as fairly conceded that the usual method of access is through the bronchial tubes. There can be no doubt that certain conditions of depressed vitality resulting from exposure to cold, excessive fatigue, etc., modify the resistant action of the ciliated epithelium of the bronchial tubes or increase the receptivity of the soil on which the germs finally rest. Once established in the air-cells the irritation produced by their presence gives rise to an exudation from the pulmonary capillaries.

It is upon this exudate that the germs thrive and are able to continue their work. It is believed that a toxin is produced by the action of the microbes, which, on being absorbed, poisons the system and gives rise to the manifestations of the disease.

In his able and exhaustive exposition of this subject in the Twentieth Century Practice, vol. xvi, to which all students are referred, Dr. Andrew H. Smith takes the ground that the condition in the lungs is simply a process of germ culture and cannot be

properly described as an inflammation. On this latter point, however, he appears to be at variance with most other writers. The pathological condition developed in the lungs soon after the ingress of the microbes certainly answers to the classical conception of inflammation inculcated by Galen and his followers. We have the symptoms and signs of pain, heat, redness, and swelling, to which may be added alteration of function. There is a fibrinous exudation into the air-cells, with the emigration of leucocytes and the diapedesis of red corpuscles.

The occurrence of cellular proliferation is admitted by all writers on the subject. Finally, the fatty degeneration, softening, liquefaction, emulsification, and eventual removal of a large proportion of the exudate by the lymphatics also answer to the usual conception of inflammatory processes. While it is undoubtedly true, as Dr. Smith has stated, that the lesser or pulmonary circulation is chiefly concerned in this process, leaving the bronchial or nutrient circulation to continue its usual work of sustaining the lung tissue, it must not be forgotten that a certain proportion of the blood supplied by the latter channel is returned to the heart by the pulmonary veins, some of the smaller branches of which anastomose with the bronchial veins. Any interference with the pulmonary circulation is thus liable to give rise to bronchial catarrh of the smaller tubes, and this we undoubtedly have in croupous pneumonia. From the author's study of this subject, he would fully agree with Dr. Smith that the process is one of germ culture, but it may also be as properly described as an inflammation as are the conditions set up by the same microbe elsewhere, viz., in the pericardium, the pleura, and the joints. It is of course a special form of inflammation produced only by special forms of microorganism and not analogous to inflammations elsewhere, because the lung itself has no analogue elsewhere in the body.

It is possibly not a more peculiar inflammation than is that of acute atrophy of the liver, acute Bright's disease, or acute myelitis. There appears to be excellent reasons for the belief that sooner or later during the acute manifestations of pneumonia a principle is elaborated either by the microbes themselves or through the agency of the leucocytes, which is capable of neutralizing the effects of the microbial toxin in the animal economy. It was discovered some years ago that the serum from the blood of animals suffering from pneumonia, taken after the crisis, gave temporary immunity to the disease when introduced into the circulation of healthy animals. The injection of cultures of pneumococci alone usually resulted

in the development of pneumonia, but if the cocci were introduced into the lung together with the antipneumococcic serum the animal remained healthy.

Many investigators, led by the Klemperer brothers, have concluded that it is to the development of this antitoxin in the system that the phenomenon of defervescence by crisis is due.

Much activity has for several years been devoted to the production of an artificial antipneumotoxin which might be available for immunizing, or which, after the disease was contracted, might be introduced into the system in anticipation of the natural product, thus hastening the occurrence of crisis and cutting short the disease in an early stage. It is not intended here to enter into a critical analysis of the great mass of literature pertaining to this matter which has accrued. The most striking experiments have been those reported by the Klemperers, Foa, de Renzi, Pane, Mossny, Emmerich, Neisser, Washbourne, Weisbecker, and Fourriere.

The reports are generally encouraging, but by no means satisfactory. All observers admit the great difficulties attending the elaboration of an antitoxin of uniform strength and stability.

The most skilful and experienced pathological chemists, with every facility for scientific investigation, have not yet succeeded in standardizing a preparation. Bearing in mind, however, the brilliant results obtained in diphtheria, there is good reason to expect that a serum of equal potency in pneumonia may yet be produced. It is along these lines that our chief hope for future improvements in the management of the disease appears to rest. However, a practicable antipneumotoxin may still be far in the future.

A most important question for present consideration is this: "Has the discovery that acute lobar pneumonia is an infectious disease, and the probable identification of its pathogenic microbe, supplied us with a rational basis for new methods of treatment which may be employed by the practitioner at large?" A not inconsiderable group of writers take the affirmative side of this question. Dr. Andrew H. Smith (*op. cit.*), who may be regarded as the chief spokesman in English for those holding this view, takes the ground that a most important object of treatment in pneumonia consists in introducing into the patient's system substances which will render the blood an unfit medium for supplying a culture which will support the life of the diplococcus. There are many excellent reasons for adopting this view.

We have succeeded in practically aborting by this means the course of malaria, rheumatism, and syphilis. Then why not pneu-

monia? The excessive vulnerability of the Fränkel microbe is properly brought forward as an argument in this direction. It is justly claimed that this microbe is but a delicate and short-lived microphyte even under the most favorable circumstances. Its course is very easily cut short in artificial cultures. Attention is called to the fact that the entire volume of the blood must pass through the pulmonary or lesser circulation in the same time required for its passage through the systemic circulation. Hence, microbes having their habitat in the field of the pulmonary circulation are peculiarly exposed to the assault of antiseptic substances held in solution by the blood. The fact is also prominently brought forward that several of the most effective of the old-time remedies used in pneumonia possess antiseptic or germicidal properties, and that it was no doubt largely by virtue of this fact that these substances often proved useful. Chief among these drugs are calomel, quinine, chloroform, and the salicylates; to these creosote has more recently been added.

Let us consider a few points in the physiological action of these remedies, beginning with

Calomel.—This is a very insoluble powder, and when swallowed appears to run the gauntlet of the gastric juice unaffected, though some have believed that a small quantity might be converted into the bichloride of mercury by the action of the hydrochloric acid in the stomach. On reaching the intestine a small proportion is converted into the soluble albuminate of mercury and absorbed as such. In contact with the chlorides of the blood a very minute quantity of the albuminate is converted into the perchloride.

The great mass of the calomel, as well as other insoluble preparations of mercury, is thrown off unchanged in the stools, and it is for this reason that large doses of the drug are often taken with impunity. Calomel irritates the intestinal mucous membrane, increases peristaltic action, prevents decomposition of the intestinal contents, and may be regarded as an intestinal antiseptic. It also acts as a speedy and efficient diuretic, but its old-time alleged influence as a cholagogue has recently been shown to be fallacious by Stadelman (in animals) and by Pfaff (in man), who found that mercurial preparations had no influence on the secretion escaping from biliary fistulæ. Now it is proposed by those who believe in the antiseptic treatment of pneumonia to administer at the very outset of the disease, or as soon as it is recognized, large doses of calomel, 20 to 60 grains, for the purpose of rendering the exudate in the lung derived from the blood an unfit food for sustaining the life of the microbes.

A most important question at once arises: Does enough of the mercurial pass into the blood to render it an antiseptic fluid, and unsuitable for nourishing the pneumococci?

Let us suppose that thirty grains of calomel is administered at one dose. What proportion of this enters the blood? It is said that five grains acts as efficiently on the bowels and on the kidneys as six or eight or ten times that quantity, and that even when a small dose is given much the greater portion is discharged from the bowels unchanged. Having no exact figures at hand, let us assume that of the thirty grains administered five grains finds its way into the circulation as the soluble albuminate. Here a small quantity, as before stated, is further converted into the perchloride, which, while beyond doubt the most effectual of the mercurial antiseptics, is a deadly poison to the human system. It is doubtful if a quantity larger than a third of a grain could be tolerated at one time. The entire quantity of human blood in the average adult male weighing 150 pounds has been estimated at eighteen pounds. It cannot be claimed, however, that the blood holds all of the mercurial in solution, for traces of it quickly appear in the urine, saliva, bile, and other fluids of the body. It must be confessed, then, that by the time the antiseptic reaches the microorganisms which it is expected to destroy, or whose activity it is expected to inhibit, it is in an exceedingly attenuated form. Does it possess power enough to effect its purpose? This question has not yet been answered.

Quinine.—The influence of this substance on the blood has been most carefully studied by Binz, Jacquet, Rossbach, Gottlieb, Kerner, and Kirschner. It appears in the urine within a short time after its exhibition, and about half the quantity absorbed is excreted within six hours. Over 90 per cent of the total amount ingested has been recovered unaltered in the urine, though Kerner found that a small quantity was partially hydrated in the tissues and excreted as dehydroxyl quinine. It is known that this drug exerts a powerful influence on protoplasm, consisting first of a transitory augmentation of its activity, followed by depression and death. It diminishes the movements of the white blood cells and effects some alteration in their shapes, and lessens their number. It inhibits the oxidizing influence of the blood, lessens acid fermentation, and is said to retard coagulation. Gastric and pancreatic ferments are rendered less active. It will thus be seen that this substance influences many, if not all, of the processes which normally occur in living matter. Quinine is further known to be entirely destructive of the plasmodium of malaria. Many old writers believed it to be a

most valuable remedy in pneumonia, some attributing to it abortive influence if taken early. It is a powerful antiseptic, and it is said that in artificial cultures a one-per-cent solution is fatal to Fränkel's diplococcus in five minutes. A most important question which remains unanswered relates to its influence on this microbe in the living body. Does it disqualify the blood for supplying a culture suitable for the sustenance of these organisms, or is it directly destructive to the diplococcus as in the case of the malarial germs?

Salicylic Acid. — This substance circulates in the blood as the salicylates of the alkalies. It is excreted by the kidneys for the most part in a combination with glycocoll known as salicyluric acid, analogous to hippuric acid. It has also been found in the milk, perspiration, and bile. The salicylate of sodium has been used in pneumonia for a number of years. Two very striking reports of its action in this disease appear in recent medical literature, viz., that of R. Liegel (*Wien. Med. Woch.*, May 7, 1898), quoted by Dr. Smith, and that of Dr. Sebring, of Kingston, N. Y. (*Medical Record*, April 22, 1899). According to Liegel seventy-two cases were treated among mining operatives with large doses of sodium salicylate— 120 grains daily, or 10 grains every two hours. Some of these cases were exceedingly unfavorable, occurring in persons of intemperate habits, and two of the patients were over 70 years of age. Not a single death occurred among these cases. A number of typical recrudescences were noted, but were easily controlled by the same agent. Dr. Sebring treated seventy-five cases of pneumonia with salicylate of sodium in the same dosage and lost but one. Four of the patients were over 80, one being 84 and a habitual drunkard. There were also several cases of mitral and other valvular cardiac lesions. The patient who died was a plethoric woman who had been troubled with cardiac syncope for a long time before developing pneumonia. Almost all the cases were severe. Sebring states that other cases of pneumonia occurring at the same time and in the same territory, but treated by other methods, frequently resulted fatally. Of 125 cases treated by other physicians with salicylate of sodium, only one died. If this salt shall prove so efficient in the hands of others as in those of the reporters above cited, we may feel sure that a specific for pneumonia has been found, and the disease will soon be robbed of its terrors. No other observers, however, appear to have used the drug so extensively. A few scattering reports are found in recent medical literature, but they refer to experience with but few cases. The writer has ventured to use the drug tentatively in several instances,

but beyond a slight lowering of the temperature and increased expectoration no influence over the usual course of the disease was manifested. It is known that the salicylates are very effective antiseptics and that they exert something like a specific influence in acute articular rheumatism, which is now believed to be an infectious disease.

We have now to settle the questions, Can it be relied upon to the same extent in pneumonia? Is it as inimical to the microbe of that disease as it is to the morbific influence, whatever it may be, which gives rise to the phenomena observed in rheumatism? As far as the author can learn no researches whatever have been made which tend directly to show that the salicylates exert any influence whatever upon the pneumococcus in the living body.

Chloroform.—This substance has been used for years in the treatment of pneumonia on account of its sedative action upon the nervous system and its anticoagulating influence on the blood. It is a valuable adjunct to cough mixtures whether in pneumonia or bronchitis. When given by inhalation its fumes are undoubtedly brought into close contact with the pneumococci, if used early in the disease before the smaller bronchi are blocked by the exudate. Whether or not it inhibits these germs, destroys them, or prevents their further depredations, is so far a matter of speculation, as no satisfactory evidence has been brought forward to prove this.

Creosote.—This substance, which is known to be a powerful antiseptic, has also been proposed in the treatment of pneumonia. It is excreted very largely by the lungs, and is thus brought into direct contact with the pneumonic process. Creosote has been recommended for many years as a remedy in phthisis pulmonalis, but it was long since discovered that it possessed no apparent influence upon Koch's bacillus. Whatever action it may have in modifying the course of pulmonary tuberculosis must be attributed to its effect upon general nutrition, or to its influence upon the phthisical expectoration. Data indicating that it affects the pneumonic microbes in the body are so far entirely lacking, and the same may be said of carbolic acid, another proposed remedy.

It strikes the writer that the following conclusions are forced upon the mind of the conservative observer after a careful survey of this field: (1) The discovery that pneumonia is an infectious disease and the recognition of its pathogenic microbe increase the hope that an abortive or specific form of medication will be brought to light. (2) Recent research strongly indicates that our chief reliance for an improvement in our present methods of treatment rests in the

elaboration of a satisfactory form of antitoxin. (3) The use of antiseptics for the destruction of pathogenic microbes in the tissues is very limited. Pathological chemists as well as clinical observers now recognize the hopelessness of attempting to discover any single body which will destroy all forms of bacteria in the system while leaving the host unimpaired. The discovery of specific remedies for several diseases, however, shows that certain agents act more powerfully upon the cause of disease than upon the tissues of the patient, and inspires the hope that the list of conditions thus yielding to specific medication may be extended. (4) Coming to the consideration of pneumonia, however, it must be confessed that little actual progress has been made in this direction. It would appear that the field has not yet been sufficiently traversed by the pathologist and the chemist to light the way for the clinician. Several facts in connection with the natural history of the microorganisms concerned in the disease still require elucidation, and we should have fuller information concerning the antiseptic solutions and the strength of the same required to exterminate the microbe before we can proceed intelligently or safely.

In the treatment of pneumonia we should ever bear in mind that it is a self-limited disease, and that its invariable tendency is to recovery, provided we can keep the patient alive a few days. While therefore the author believes that in favorable cases we may cautiously test the new germicidal remedies, this should not, with our present knowledge, involve a wide departure from an intelligent expectant form of treatment, which taken as a whole has resulted in a far less mortality-rate than attempts to jugulate or abort the disease.

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ON CARCINOMA IN CATTLE.[1]

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Preparatory to certain investigations on carcinoma, we first had to examiue the occurrence of carcinoma in cattle. Inasmuch as it seems to us that they may be of some general interest, we will give a short account of a few of the results obtained.

In looking over the special works on the pathology and therapeutics of domestic animals, we find but little on carcinoma. In Kitt's Pathological-anatomical Diagnosis (Stuttgart, 1894) we have thus far found the best record of the reported cases of carcinoma. We find relatively a small number of isolated cases of carcinoma of cattle reported, usually only a single case in each instance, of carcinoma of the mammary gland, of the gall-bladder, perhaps of the second stomach, and carcinomatous ulcer of the first stomach of cattle, carcinoma of the bladder, ovary, and uterus, and also adenocarcinoma of the kidney. Among these cases only a certain number seem to have been carefully examined microscopically. In a special work by G. Woodruffe Hill (London, 1881), entitled Bovine Medicine and Surgery, we find, under the designation "Cancer," various tumors, like carcinoma and sarcoma, undifferentiated. Thus he describes a cancer of the maxilla, which according to illustration and description might perhaps as well be a periosteal sarcoma as a carcinoma. His description of cancer of the eye, called fungus hæmatodes, so far as its macroscopic appearance is concerned, is incorrect. The tumor is said to originate behind the eye, causing it to protrude, but we will presently see that the origin and development of the tumor is of quite a different type. There is no mention made of microscopic examination.

Our results are based on the statistics of the cases of carcinoma in cattle at the Stock Yards since July, 1898, in which the principal organs were examined post mortem. In sixteen cases, from September, 1899, to February, 1900, a fuller post-mortem examination was made. In a number of instances in the cases last mentioned, microscopical examinations were made of such organs and lymphatic glands in different parts of the body as had a suspicious appearance. Our present report sets forth only the results thus far obtained. We hope to collect additional material.

[1] Read before the Chicago Academy of Medicine, Feb. 9, 1900.

The first question is: Where do we find carcinoma in cattle? So far we have found it in two places, viz., at the inner canthus of the eye and on the vulva. We must add, however, that all the cases thus far seen, with the exception one carcinoma of the vulva, were carcinomata of the inner canthus of the eye. Therefore, by far the largest majority of cases of carcinoma we find in this one place. Just as we have found one case of carcinoma of the vulva, we may expect to find an occasional carcinoma at some of the other places mentioned in literature. But it is important to emphasize the predominance of carcinoma at this one point, as shown by our examinations, as far as they have gone up to the present. Further investigations may possibly modify our results to some degree.

The second question is: How often do we find carcinoma in cattle? The following tabulated statement will give us information on this point:

From July, 1898, to January, 1899, but four cases were seen. These were observed during the month of October. No case in November and December, 1898. From January 1, 1899, to January 1, 1900, we counted forty-eight cases of carcinoma.

The following is a monthly statement of the number of cases examined: January, 1899, none; February, 6; March, 3; April, 2; May, 2; June, none; July, 3; August, 3; September, 4; October, 2; November, 9; December, 14; total, 48.

So we find in one year (1899) forty-eight cases at the Stock Yards. In addition there have been in the last two years two other cases of carcinoma reported at the Stock Yards, but which were inaccessible to examination. That would bring the number up to forty-nine cases in one year. In the same year 2,514,446 head of cattle were received at the Stock Yards, so that there was one carcinomatous animal in every fifty thousand. Of course, this can only give an approximate idea of the frequency of carcinoma, and only upon the supposition that as many carcinomatous cattle are delivered at the Stock Yards as non-carcinomatous cattle. This may easily be the case, the owner of the carcinomatous cattle getting some pay also for the diseased cattle, and in this way running no risk of losing all, should the animals die.

Concerning the sex of the diseased animals, there is one fact which at first glance seems very remarkable. Of the sixty animals examined, fifty-nine were cows, and only one animal was a steer, about six years old. This one steer was perfectly white. It is indeed a fact that animals without pigment behave in certain ways differently from pigmented animals; thus we find melanotic sarco-

mata, as is well known, usually in white horses. But this apparently remarkable fact touching the distribution of sexes will be explained, if we take into account the circumstance that steers are usually killed when young, often before the sixth year — the majority of them when quite young — the cows becoming much older. All the cows coming to the Stock Yards with carcinoma were from six to fifteen years of age, therefore of greater age than steers usually attain. Still we cannot absolutely deny the possibility that sex may have something to do, after all, with the frequency of carcinoma in cattle. It is, however, much more probable that the remarkable findings in this respect are to be explained by the difference in age. Thus it seems that carcinoma in cattle, as in men, is a disease of advanced years of life.

How does the development of carcinoma affect the general state of health of the animal? All the animals affected with carcinoma were very much emaciated. This loss of weight was already present when the carcinoma was not very much ulcerated. The emaciation was most pronounced in the animals most affected by carcinoma. Metastases in the inner organs had nothing to do with this effect, as we shall see later on. But how far this effect is to be attributed to carcinoma, and how far to ulceration (occurring also in the beginning, but in a slight degree), it is difficult to state.

We made a number of inquiries as to the rapidity of development of carcinoma, the external circumstances that might influence the disease, and the first changes visible. Most of our attempts to get information from the proprietors have been unsuccessful thus far, but through the kindness of Dr. Holcombe our attention was directed to a cattle ranch near Cheyenne, Wyoming, whence we received some information. Here is a ranch which keeps about a thousand cattle, about two thousand coming and going during the year. On this ranch were found every year one or two cases of carcinoma of the eye. This observation covers a period of ten years, as the proprietor informed us in answer to our written inquiries. According to Dr. Holcombe, who lived in this neighborhood as military veterinarian, the ranches in the adjoining district of equal size are practically free from this disease. Thus it seems that carcinoma of the inner canthus of the eye is almost endemic on this one ranch. That the course of the disease is not very rapid can be inferred from the statement of the proprietor of this Wyoming ranch, that pregnant carcinomatous cows are expected to give birth to calves. The first symptom noticed is what the proprietors call "a running eye."

What is, then, the development of this carcinoma of the eye, known among veterinarians under the name of fungus hæmatodes? We saw two cases where the lesion was still in a comparatively early stage. We will describe such a case. In the region of the caruncula, which in normal animals is about the size of a pea, rather deep-seated, just between the opening of the lacrimal ducts, and covered with hairs, we see a papillary elevation about the thickness of a finger. The membrana nictitans, which is very large in cattle, and is pushed forward laterally when a foreign body is in the eye, was slightly thickened, very little ulcerated, the ulceration being barely visible to the naked eye. The conjunctiva of the lid was almost normal, but near the inner canthus could be seen a number of small nodules, which pushed forward the conjunctiva in a few places. There was a slight ulceration of the mucous membrane of the conjunctiva. The skin around it was normal, as always in young cases.

A case further advanced presents the following picture: In the region of the inner canthus we see large tumor masses, which appear papillomatous, especially on sectional view. They are ulcerated on the surface, and covered with the remnants of old hemorrhages. The lower and upper lids, especially on the conjunctival side, are ulcerated, and sometimes partially grown together. The eye is displaced laterally and backwards. The cornea is opaque. If one opens the orbital cavity, one will find tumor masses in the orbital fat. If the carcinoma is already far advanced, it penetrates into the bone, and may break through in different directions. For instance, we may see the tumor penetrate into the antrum of Highmore, as a round body covered with small protruding nodules that indicate the direction of growth. In some cases we may also observe how the carcinoma begins to penetrate into the eye. We observe this at the cornea, as well as at the junction of the cornea with the sclera, and likewise further backward into the sclera toward the chorioidea. Later on the eye will be entirely destroyed. Out of a total of thirty-two cases we found the eye destroyed in six, and the bone affected in fifteen.

What do we find with reference to metastases? In thirty-two cases, where the lymphatic glands and the inner organs were more carefully examined with this point in view, we found the retro-maxillary gland affected twenty times, and as a rule changed into a large metastatic tumor with some remains of lymphatic tissue; twelve times, viz., in the twelve least advanced cases, we found the lymphatic glands free of metastases. The macroscopic findings

were confirmed in a number of cases by microscopic examination. Once we found the submaxillary gland, once the retropharyngeal gland, once the anterior mediastinal gland, similarly enlarged and changed. In these last three cases it was impossible to examine the glands microscopically. Once we found a metastatic infiltration in the masseter muscle of the same side. We also examined microscopically a number of lymphatic glands in other parts of the body —cervical, submaxillary, bronchial, mediastinal, portal, and mesenteric glands with somewhat suspicious appearance — always, however, with negative results. Similarly we could find neither macroscopically nor microscopically any metastasis in the inner organs. Although we found extremely large metastases formed in the retromaxillary gland even in the majority of cases, we found no further metastasis, with the exception of the few cases mentioned, where probably a neighboring gland was affected. In one case where we were induced to microscopically investigate the lungs with the bronchial glands, we found in both signs of tuberculosis— necrotic tissue and typical giant-cell tubercles. Tubercle bacilli were not demonstrated, as bacterial stains were not employed; but the structure of the giant cell and its connection with the surrounding tissue exclude a foreign body as the exciting cause. To this combination of tuberculosis and carcinoma in cattle we shall also give attention in further investigations.

Two cases of carcinoma among the sixty investigated excited our special interest, because in these cases there were present in the same animal two carcinomata, the carcinoma of the vulva already mentioned, and in the second case the inner canthus of both eyes was affected with carcinoma, the disease being further advanced in one eye than in the other. In the case of carcinoma of the vulva (which, by the way, was more ulcerated than the carcinoma of the eye) we found by macroscopic and microscopic examination distinct carcinomatous nodules beneath the mucous membrane. But the inguinal lymph glands in this case were microscopically found free from carcinoma. If we consider how rarely, relatively speaking, carcinoma occurs in cattle (according to our investigations about one case in fifty thousand), the occurrence of a double carcinoma in two of the sixty cases is surprising. Whether we are to regard this as an autoinoculation, in the case of the vulvar carcinoma possibly caused by the rubbing of the head at the vulva, or whether there were certain constitutional conditions necessary for the occurrence of carcinoma which made multiple occurrence easy, must at present be left undecided.

Histological examination showed the carcinoma of the eye to be one of stratified epithelium with horny changes and epithelial pearls, as they can be observed in carcinoma of stratified epithelium from various other places. The metamorphosed epithelium showed less horny fibers, or lamellæ, than compact horny layers, such as take up eosin very readily. This character was most pronounced in the cases not very far advanced, in which we found a papillomatous elevation in the region of the caruncula. Here we found stratified epithelium arranged around the hairs and then penetrating into the deeper tissues, forming horny masses in the center of the alveoli, red-stained with eosin. In other cases, already further advanced, we were never able to see anything of the caruncula.

If we follow microscopically the development of the carcinoma, we find in comparatively fresh cases the carcinoma in the deeper part of the membrana nictitans. In many cases we are able to see the mucous membrane of the membrana nictitans intact over the tumor. In other places probably a secondary union of the tumor and mucous membrane has taken place. In still other places the mucous membrane is thrown off and the growing carcinoma takes its place. Often in these cases it is difficult to see where the tumor begins and the mucous membrane ends.

In the connective tissue of the membrana nictitans, at the side of the hyaline cartilage, which lies in the center of this fold, we find a rather large gland, the so-called Harder's gland, which penetrates deep into the orbital cavity. In no case was it possible to see the transition of this gland into the tumor. Both were separated by connective tissue, or possibly the tumor had entirely replaced one lobule of the gland. The glands sometimes showed degenerative changes. We find occasionally the remains of a gland duct in the tumor tissues under these conditions. Other small glands in this region are also occasionally surrounded by the tumor, but there is no indication that the tumor originates from these glands. That supposition would be excluded, furthermore, by the histology of the tumor, as above described.

In the orbital cavity we also find the glandular nodules and the nodules of the tumor sharply separated. From thence the tumor penetrates further beneath the conjunctiva of the upper and also of the lower lid. The relation of the tumor to the mucous membrane of the conjunctiva at this place is similar to that in the membrana nictitans. Often one can see distinctly beneath the mucous membrane a layer of lymphocytes, and beneath these the tumor, but in other places the pressure of the tumor destroys the mucous mem-

brane. The carcinoma may then grow up and include the remains of the mucous membrane.

If the tumor penetrates into the eye we find at some places the chromatophores of the iris and chorioidea between the alveoli of the tumor. Frequently the tumor is surrounded by small round cells, which show at the side of the tumor not infrequently the character of plasma cells—just as the mucous membrane of the conjunctiva, which lies near the tumor, is accompanied by lymphocytes.

The blood-vessels near and between the tumor masses are often affected by endarteritis. The connective tissue, especially in metastases of the lymph glands, we find occasionally tendon-like. The tumor itself, during its progressive penetration into the surrounding tissues, retains on the whole its character, but sometimes we find, instead of the horny changes inside of the alveoli, loosely arranged hyaline, carcinomatous cells. The character of the tumor also remains unchanged in the metastases of the lymph glands. At some places we see the tumor cells penetrating between the lymph cells.

These histological findings with macroscopical observations make it at least very probable that the tumor originates from the epithelium of the caruncula, or the conjunctival epithelium just surrounding the caruncula. In our future investigations we shall endeavor to find, if possible, still earlier stages, and if these should modify our conclusions we shall communicate it.

The carcinoma of the vulva shows on the whole the same character as the carcinoma of the eye. But this alone does not warrant the conclusion that the one carcinoma has been transplanted from the other, because already in the normal mucous membrane we find at both places stratified epithelium. One similar carcinoma of the vulva we find recorded by Bang Stockfleth.

In conclusion we desire to emphasize once more those of our findings that may be of general interest:

1. Through these investigations we shall be enabled to get an insight into the relative frequency of tumors in men and in animals. According to Prussian statistics one death in from thirty to fifty is caused by carcinoma. The average annual death-rate of a standard million human beings (above thirty-five years of age), from 1881 to 1890, in England and Wales, was 1844—*i. e.*, 1.8 per thousand. The annual death-rate per million of all ages, from 1891 to 1895, in England and Wales, was 712—*i.e.*, .7 per thousand. In 1899 we find in cattle one case of carcinoma in fifty thousand. If the

statistics, which we intend to continue collecting, should show in the following years a similar proportion, carcinoma in cattle would be about one-fiftieth to one-seventieth less frequent than in men.[1] But certainly these statistics as to the total occurrence of carcinoma in cattle can only be regarded as provisional, if we take into account the great difficulty of making statistics of beginning carcinomatous changes among two and one-half million cattle in one year. There is, however, probably no place offering an opportunity for gaining these data as the Chicago Stock Yards. They are of importance, and some way should be found to compile the statistics as to the general occurrence of carcinoma among cattle with still greater accuracy.

2. The place where carcinoma is found most frequently in cattle is where, through the running of the tears and the motion of the membrana nictitans, foreign bodies entering the conjunctival sac are deposited, and where these foreign bodies can easily be kept back by the hairs of the caruncula. This is favored by the fact that in cattle the caruncula lies somewhat deeper, just between the openings of the superior and inferior lacrimal ducts, and the hairs may also favor the retention of foreign bodies just at this place. But whether the foreign bodies cause the development of a carcinoma by continuous injury, or whether the foreign bodies which are the cause of carcinomata must be certain parasites, our findings do not allow us to decide. So far we have been unable to ascertain from the proprietors whether there exist any peculiar conditions on this Wyoming ranch in regard to the water-supply or to the feeding of the animals. We must, therefore, leave it undecided for the present, if these observations must be explained by infection from animal to animal, or by infection from an external agency. But certain observations previously reported, especially by Behla, in *Centralblatt für Bacteriologie*, 1898, proving in human beings the endemic occurrence of carcinoma in Kalau, seem to be more easily explained by parasitic infection. Behla believes certain organisms of myxamebic character, which infect certain vegetables, to be the cause of this endemic occurrence of carcinoma. But Behla, as others before him, emphasizes the possibility that different carcinomata may be caused by different organisms. Fiessingen, Noel, Armaudet, Sorel, Viguès, and Gueillot,[2] had already, before Behla, reported cases of endemic occurrence of carcinoma in France. Fiessingen and Noel made certain fungi responsible, which are found espe-

[1] A. Newsholme: Vital Statistics, London, 1899.

[2] Cited from Lubarsch u. Ostertag, Ergebnisse der Allgem. Pathologie, 1896.

cially on trees, and which cause there certain tumor-like formations. The proprietors of the ranch with which we have been in communication denied knowledge of any peculiar conditions existing on their farm. Our attention is especially called to these questions by our observation of the almost endemic occurrence of carcinoma on this ranch, but only by further researches can it be decided if a parasitic cause is present. So far we certainly could not find in the carcinoma any coccidia, or yeast-like bodies, the appearance of which could not just as well be explained as products of the epithelial cells. Certainly the investigations of the last ten years have at least proved that by simple microscopic examination and staining, the question whether we have to deal with parasites, or with metamorphosed cells, or parts of cells, cannot be decided. An interesting discussion of the facts suggesting the parasitic origin of cancer we find in Roswell Park's recent papers—"Cancer as a Parasitic Disease" and "A Further Study into the Frequency and Nature of Cancer" (*Medical News*, April 1, 1899).

3. We found in our observations a very instructive demonstration, that besides the external, exciting causes, there are some other factors of importance in the development of carcinoma, as, for example, the age and possibly also the sex of the animal. In this connection it is well to remember that the statistics of Finkelnburg and Spencer Wells show that in the human race also the female sex is oftener affected by carcinoma than the male; though in the human race carcinoma of the face and extremities seems to be more frequent in males, probably because they are more exposed to injuries than females. But difference in exposure to injury does not apply to cattle; here we find it more frequently in the female. In young animals all these external irritations or parasites, if parasites be present, do not seem to be able to produce carcinoma.

4. Another observation of general interest is the constant absence of metastases in the deeper lymph glands or other organs, although the metastases in the retromaxillary lymph gland very often attain a great size.

The question arises, Does secondary destruction of carcinomatous epithelium in the deeper lymphatic glands take place? Frequently we find in the lymphatic gland necrotic parts and hemorrhages, which prove pathological processes.

Our attention will also be directed in the future to the interesting occurrence of multiple carcinoma. We intend to continue our investigations in these and other directions.

BOOK REVIEWS.

PNEUMONOMYKOSIS ASPERGILLINA, ANATOMISCHE UND EXPERIMENTELLE UNTERSUCHUNGEN. By Dr. Fr. Saxer. Pp. 169. Jena: Gustav Fischer. 1900.

The author gives the literature of the subject, and adds valuable personal observations of the disease in man and an experimental study of the disease in animals. The observations of the disease in man are founded upon five cases, four of which were examined post mortem and one of which recovered. In the fatal cases the lesions were found in various stages.

In the first case, the patient, a man of 39 years, died twenty-six days after injury, from a septic fracture. The areas in the lungs varied from the size of a pea to that of a cherry; they were rather sharply circumscribed from surrounding lung by a tough, yellowish border, enclosing grayish-yellow discolored portions of tissue, somewhat granular in appearance. Upon section, a bronchus was seen in the center of some of the areas, and in some a small arterial branch with an obstructing tough, pale-red plug. In one of the larger areas it was very evident that the inner part of the grayish-yellow center extended out in the bronchus, and in a second area was seen a dichotomously divided bronchus whose lumen was filled with a yellowish mass; in another part the lumen was not completely filled, the wall being somewhat shiny and white. Here there was in the plug a grayish-green spot with a mold-like appearance. Upon microscopic examination the areas were very much alike. They were surrounded by a dark colored band, one millimeter or more wide in places, and at other places thinner, which separated them from the lung, either containing air or pneumonic infiltration. Within the ring the lung tissues were entirely dead, showing no nuclear stain, but the form of the primary structures was well preserved. Serial sections were sometimes required to recognize the central bronchus. The necrotic mass was traversed by mycelial threads which radiated outward, but the necrosis always extended beyond the growth of threads. On this inner wall of the bronchi, spore-carrying heads were observed. Purulent softening was entirely absent. The mold was recognized as the aspergillus fumigatus. The vascular obstructions were regarded as secondary and not embolic.

Case 2 was also an early example, occurring in a lung affected with croupous pneumonia. As in the first, there was necrosis of tissue about the central star-formed mycelial growth, thrombosis of arterial branches, and characteristic demarcation from the surrounding tissue.

Case 3 had a large cavity in a phthisical lung caused by the breaking down of a primarily solid mold nodule with the outward character of an "odorless gangrene." The patient was 57 years old at time of death. Tubercular lesions were abundant in the lungs. One cavity the size of a hen's egg was circumscribed, lying just below the pleura, filled with odorless air and having a comparatively smooth wall. No caseous masses found anywhere, but at one place in the cavity and in the surroundings were seen pea-sized nodules beset with

pin-head white-gray areas. The nodule in the cavity had a velvety surface, which microscopically showed dense mycelia with numerous heads of the aspergillus fumigatus. Microscopically, the wall of the cavity consisted of an internal necrotic layer, and outside of this a layer without nuclei in which the alveoli could be easily recognized. A characteristic zone of demarcation was not found. Saxer thinks that there was at first a solid necrotic mass caused by the mold, the sequestrum having been largely liquefied and carried outward, leaving the cavity.

Case 4 occurred in an old woman of 72 years in an old cavity in an indurated lung. The cavity had a smooth, partly dark-red wall. On the inner surface were firm brown granules, also some soft yellow masses, varying in size from that of a pin-head to a millet seed, attached loosely or firmly. The granules consisted almost exclusively of dense mold mycelia. The mold masses were located entirely within the inner wall. The boundary of the cavity was formed of a vascular, richly cellular granulation tissue layer. Over the granulation layer extended a layer of flat epithelium which spread often under the mold nodules and sent ill-defined tongues into the deeper parts. Whether the mold invasion was primary or secondary is not clear to the author.

Case 5 recovered. The patient was 63 years of age. Thirteen days after an operation for suppurative cholecystitis and pericystitis, fever returned, and five days later pneumonic areas were present in both lungs. There was dulness with increased fremitus and indefinite respiratory sounds from the clavicle to the third rib, which persisted for ten weeks. Sputum was abundant, mucopurulent, and at first bloody. After eight or nine weeks it became slight, mucopurulent, with a musty odor. Microscopically, there were present red blood-corpuscles, no tubercle bacilli, and after ten weeks no traces of lung tissue. At this time, without elevation of temperature, the cough became worse and the expectoration increased, and had, as formerly, a musty odor. In it was discovered a dark-grayish, irregular fragment about the size of a cherry-stone, stained with blood at one point. This mass consisted of necrotic lung tissue with pigment, detritus, mucoid and fatty material, red corpuscles, and leucocytes. It also contained abundant mold threads, and spore carriers were found. During the succeeding eleven days mycelial threads were twice found with small pieces of tissue. From the twelfth day the expectoration stopped, and the abnormal physical signs in the lungs disappeared. Recovery from this time was uneventful. This case differed from gangrene in the absence of foul odor.

In the review of the literature upon the subject the author quotes extensively from the classical descriptions of Virchow and from later writers. The subject of the pseudotuberculosis aspergillina of French authors is discussed critically. He does not agree with them in identifying the lesion with those occurring in true tuberculosis.

The results of experiments upon animals were variable. In some cases he was able to produce lesions which were very like those found in the spontaneous disease in man. He believes that destructive processes in the lung of man are more common as the result of the pathogenic action of certain molds, especially the aspergillus fumigatus, than is recognized by most authors. Pneumonic processes are usually present, but the fungus may locate in lungs which are unaltered or changed in other ways. In opposition to Virchow, he refused to accept the explanation of a secondary growth.

THE INTERNATIONAL TEXT-BOOK OF SURGERY. By American and British Authors. Edited by J. Collins Warren, M.D., LL.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. I: General and Operative Surgery. Price, $5.00. Philadelphia: W. B. Saunders. 1899.

In offering a new work upon surgery the authors feel that no apology is needed for making an addition to the already excellent list. Modern surgery is still in a transition stage. Their aim has been to produce a reliable text-book of surgery which, while not aiming to be novel, should at the same time omit antiquated methods, and present only that which is practical and useful to-day.

Volume I is divided into twenty-eight chapters. It contains 907 pages, has 458 illustrations in the text, and nine full-page plates in colors. H. C. Earnst contributes the article on surgical bacteriology. In the chapter on inflammation, by Warren, it is said to be divided into two principal varieties—simple and infective. In this definition the author departs from the better accepted view that all inflammation is infective. The definition given of simple inflammation is "a disturbance of the nutrition of a part, brought about usually by trauma, which has been expressed by the word damage. It may be defined as the lesion in the mechanism of nutrition, owing to which its efficiency is impaired, but which, if not so severe as to cause death, produces conditions favorable for the repair of the part." The author may be quite clear as to what the above means, but the reviewer has to confess that the idea seems hazy. A perusal of this chapter shows what a misnomer the term inflammation is. As applied by the older writers to a simple clinical manifestation in which there was pain, heat, redness, and swelling, its meaning was clear and distinct. When, however, the changes in the blood-vessels and the relation of infection to this process are considered under the old term, then not a little confusion is imported into the subject.

The chapter on surgical pathology of the blood is contributed by R. C. Cabot. A perusal of this short chapter shows how surgery and internal medicine, or, at least, the methods of diagnosis applicable in the latter, join hands. There is a description of blood regeneration after operation, as well as of the importance of blood examination in accident cases. Of course, the relation of the blood in the surgical infections and malignant disease, as well as in leucemia and Hodgkin's disease, needs no emphasis. In the treatment of tetanus reference is made to the old remedies—calabar bean, chloral, cannabis indica, curare, and amyl nitrite. The serum is spoken of, but there is no mention made of the carbolic acid treatment, which has a higher record of recoveries than any method hitherto employed. In the treatment of actinomycosis the value of iodide of potassium is emphasized.

The chapter on the technique of aseptic surgery is one of the best in the book. We would especially commend the following simple statement of aseptic surgery: "The surgeon should appreciate the fact that the introduction of bacteria into the body takes place in nearly all cases through some lesion on the external surface of the body or in a mucous tract, and that without such a wound bacterial invasion is rare; that the commonest source of wound infection is the pyogenic organism, although a number of these bacteria are required to cause real disturbance of wound healing; and, finally, that the success of this invasion is dependent not only on the virulence of the germ, but also upon the condition of the soil, the tissues and fluids of the individual, and upon what is

termed the power of resistance belonging to the individual. . . . It is now thought that nearly all bacterial invasion can be traced to man's tangible surroundings."

A study of the remaining chapters of the book, which are too numerous to consider in detail, shows that the work is thoroughly up to modern requirements. There is, of course, some difference in the quality of the different communications, as is inevitable in a composite work of this character. A brief examination shows that the editing has been well done; there is no serious overlapping, nor are there any striking omissions. It is one of the best recent examples of the production of a text-book by numerous writers in which the whole subject is symmetrically presented.

AN AMERICAN TEXT-BOOK OF SURGERY FOR AMERICAN PRACTITIONERS AND STUDENTS. By Phineas E. Connor, M.D., Frederick S. Dennis, M.D., William W. Keen, M.D., Charles B. Nancrede, M.D., Roswell Park, M.D., Louis S. Pilcher, M.D., Nicholas Senn, M.D., Francis J. Shepherd, M.D., Lewis A. Stimson, M.D., J. Collins Warren, M.D., and J. William White, M.D. Edited by William W. Keen, M.D., LL.D., and J. William White, M.D., Ph.D. Third Edition, Thoroughly Revised. Philadelphia: W. B. Saunders. 1899.

The first edition of the American Text-book of Surgery was issued in 1892. The prompt favor with which it was received was doubtless due to the commanding position of its numerous contributors. In the second edition, published in 1895, an effort was made to keep the work abreast of the advances of modern surgery. There was added a chapter on symphyseotomy, the use of the Murphy button, and Witzel's method of removing the Gasserian ganglion. The new chapters introduced into this, the third, edition is a full consideration of serum-therapy; leucocytosis; postoperative insanity; the use of dry heat at high temperatures; Krönlein's method of locating the cerebral fissures; Hoffa's and Lorenz's operations for congenital dislocation of the hip; Allis's researches on dislocations of the hip-joint; lumbar puncture; the forcible reposition of the spine in Pott's disease; the treatment of exophthalmic goitre; the surgery of typhoid fever; gastrectomy and other operations on the stomach; several new methods of operating on the intestines; the use of Kelly's rectal specula; the surgery of the ureter; Schleich's infiltration method and the use of eucaine for local anesthesia; Krause's method of skin grafting; the newer methods of disinfecting the hands; the use of gloves, etc.

In the treatment of tetanus there is no mention made of Bacelli's method of hypodermic injection of carbolic acid, though the results are far superior to those obtained by the use of antitoxin.

Hydrophobia is recognized as an infectious disease resulting from the inoculation with a specific virus. It is said that it may be distinguished from hydrophobia imaginaire or lyssophobia. Evidently but little importance is attached to the discussion which has been carried on largely in Pennsylvania, where doubts were expressed of the existence of this disorder as an acute infectious condition.

The chapter on fractures reads like a historical essay. With the exception of suture of the patella and ambulatory treatment of fracture of the thigh, there is very little that is referred to which has come out in the last few years. In fracture of the clavicle, Velpeau's and Sayre's retentive apparatus are figured.

In Colles's fracture the same old retentive splints are spoken of. Passive movements in fractures are, for the most part, condemned. Practically no consideration is given to the treatment of the clavicle without retentive apparatus and by the use of massage. The use of manipulation in relieving the accumulation of fluid in the joints is not accurately described. Of course it is "massage," but in order to have it effective it must be especially directed toward stimulating the synovial membrane to absorption.

The general arrangement of the book is in four parts, the first dealing with general surgery, the second with special surgery, the third with regional surgery, and the fourth with operative surgery. There is much in this work to commend, but not a little with which fault may be found. The arrangement is none of the best, and there is a marked inequality in the value of different chapters.

OPERATIVE SURGERY. By Joseph D. Bryant, M.D. Volume I. New York: D. Appleton & Co. 1899.

The first volume of Bryant's Surgery deals with general principles, anesthetics, antiseptics, control of hemorrhage, treatment of operative wounds, ligature of arteries, operations on veins, capillaries, nervous system, tendons, fascia, muscles, bursæ, bones, amputations, deformities, and plastic surgery. This is the third edition of Operative Surgery. It is considerably enlarged, but the general form of the earlier editions has been maintained. Volume I contains 749 illustrations, fifty of which are colored.

Under the general considerations the author discusses anesthetics, giving the general preference to chloroform, stating that he thinks ether is used rather too frequently. The statistics of Gurlt are quoted, in which it is clearly shown that chloroform is a more dangerous anesthetic. It is claimed that the after-effects of ether are more disagreeable, and that it often causes inflammation of the kidneys. There is no mention of the fact that late observers show that chloroform is quite as dangerous, nor is there any mention of the after-treatment of ether narcosis, and of the value of inhalations of acetic acid and washing the stomach, to avoid nausea and vomiting. The chapter on the control of hemorrhage is an excellent contribution to the subject, though the method of torsion is not recommended as strongly as it should be. This part of the work includes a description of the preparation of catgut. There is no description of electrolysis combined with pressure in the treatment of hemorrhage. Operative wounds and the ligature of arteries are carefully described. The latter chapters contain numerous colored plates showing the relation of arteries, veins, and nevres. In operations upon veins and capillaries transfusion is described. Of course, to make it complete, arm-to-arm transfusion is figured. Saline transfusion is described, and Bull's apparatus is illustrated. The author says that saline fluids meet the indications quite as well as blood, are easily obtained, and do not expose the patient to many of the dangers attendant upon the use of the latter.

In operations upon the nervous system subdural hemorrhage is spoken of, the results of which are said to justify continued efforts in this direction.

The chapters dealing with operations and plastic surgery are superior to most modern works upon operative surgery. The work is up to the demands of modern operative surgery; at the same time, there are some significant omissions. It will, however, remain for a long time one of the leading works upon the subject.

A Manual of the Practice of Medicine. By A. A. Stevens, A.M., M.D. Fifth Edition, Revised and Enlarged. Price, $2.00. Philadelphia: W. B. Saunders. 1898.

This is a small student's manual, prepared especially for the undergraduate. It has 519 pages, is printed in large type, and bound in flexible covers. It belongs to the same general class of works as the quiz compends, but is rather more ambitious than the latter. It largely deals with definitions, but the arrangement of the subject-matter is admirable. For example, the first part of the work, dealing with the digestive system, has a short introduction, in which there is a description of the general symptomatology of digestive disturbances dealing with vomiting, examination of gastric contents, abdominal pain, distention, etc. By such an arrangement the undergraduate has his mind directed to the close relation between symptoms and diseases. After the study of the symptoms his attention is specifically directed to the various special diseases of certain organs. In the study of the diseases of the blood and ductless glands the same arrangement is maintained, and a description of the general symptomatology of the blood and its examination is given; the same is true of the urine and diseases of the kidneys.

A Text-book of Diseases of Women. By Chester B. Penrose, M.D., Ph.D. Third Revised Edition. Price, $3.75. Philadelphia: W. B. Saunders. 1900.

This third edition of Dr. Penrose's Gynecology is cast upon the same general lines as those which preceded it. As modern works in gynecology go, it is a comparatively small book, containing but 531 pages. It has been prepared for the medical student, and does not aim to discuss mooted points or to put forth all that might be said in a work on this subject. It is concisely and clearly written; the work of others is but little referred to. It largely deals with diagnosis and operative technique. Only so much pathology is referred to as seems to be essential in understanding the simple and direct statements dealing with diagnosis and treatment. For the undergraduate students it will retain its popularity, though for the more mature gynecologist it will be found deficient in many respects.

The work is handsomely issued by the publishers and is well illustrated.

A Manual of the Diagnosis and Treatment of Diseases of the Eye. By Edward Jackson, A.M., M.D. Price, $2.50. Philadelphia: W. B. Saunders. 1900.

This is one of the smaller works on diseases of the eye. It is intended to meet the needs of the general practitioner in medicine and of the beginner in ophthalmology. Especial emphasis is laid upon the conditions likely to be presented in practice. From this standpoint the work is a valuable contribution to current literature.

Recollections of a Rebel Surgeon, and Other Sketches. By F. E. Daniel, M.D. Austin, Texas: Von Boeckmann, Schultze & Co. 1899.

This small book is a series of sketches, many of which have appeared in the *Texas Medical Journal*, and which are now collected into a small volume. As the title indicates, they are scenes and incidents from the life of a Confederate surgeon during the war of the rebellion.

EDITORIAL COMMENT.

THE ANTIVIVISECTIONISTS.

There recently appeared before the committee of the Senate having the antivivisection bill in charge some of the leading physicians of Pennsylvania and New York. At considerable personal expense and loss of time they visited Washington to throw the weight of their personal influence against a favorable report upon this bill. We are told by the antivivisectionists that the fight is now on and will be continued until the bill is passed. If they fail at this session, the effort will be renewed in the next Congress, and so on indefinitely. This is a discouraging outlook, but it is a perennial burden the medical profession must bear, and each time the question of vivisection is brought up the issue must be squarely met and the legislature informed upon the merits of this so-called reform movement. Apparently, in most instances, they can be relied upon to take sensible views of the matter, providing they are informed regarding all of its details.

It is a notorious defect in the average reformer that he always sees things partially and has no true perspective by which to view a particular reform movement which he advocates. The amount of suffering implied in the transportation and slaughter of animals, to say nothing of the brutality of those in charge of domestic animals, makes the amount of suffering inflicted by vivisection trivial, even if the average operation upon animals was done without an anesthetic. Such a simple fact as that all cases of vivisection are carried out under the influence of an anesthetic appeals not at all to these busy agitators.

We would especially invite the attention of antivivisectionists to an editorial which appears in the February issue of the *Journal of Medicine and Science*, entitled "Man as a Destructive Agent." We feel sure that they would find in this article ample opportunity to exercise all the humanitarian instincts of which they are capable. In speaking of the useless slaughter of the lower animals this editorial says: "We laugh at the untutored savage or the barbarous Fijian with his inordinate love of display, with his hideous tattoo marks, his war paint, his massive amulets, and his rings hung from nose, ears, and lips, and yet so great is the passion for personal adornment among the more intelligent civilized races that one writer

has declared that 'whatever bird fashion selects for a victim must ultimately succumb to her insatiable demands.' Obedient to the demands of milliners, several species of birds have already become extinct, and still the wanton destruction goes on. Careful investigators have concluded that millions of birds are killed annually for the adornment of hats alone, and since by far the greater number of them are killed during the reproductive season when the plumage is most brilliant, their death at this time prevents the renewing of the species. Reliable statistics gathered in every State in the Union, and published by the New York Zoological Society, show that the average decrease in bird life in the whole country during the last fifteen years amounts to more than forty-six per cent; that is, there are only about one-half as many birds in the United States as there were fifteen years ago."

The writer points out the great increase that has taken place in insect pests, such as wheat weevils, potato bugs, locusts, etc., and it is believed to have some relation to this enormous destruction of bird life. Not only is this destruction of birds accompanied by, in the aggregate, an enormous amount of animal suffering, but the question is fraught with an economic importance—but here we are trespassing upon a subject that is practical and useful, and one that, when thrown at an antivivisector, will make as much impression as to cast a pebble at a mountain.

LABORATORIES IN HOSPITALS.

Some years ago, with the introduction of laboratory methods of teaching, the people made the discovery that our general hospitals were devoid of laboratory equipments, and that in comparatively few of the special hospitals was provision made for this sort of investigation. It was charged that the hospitals for the insane were strikingly backward in this direction, and the absence of equipment in these places allowed the abundant material to be wasted. The last few years have seen striking changes in this respect, and at the present time there are few large hospitals for the insane in which there is not a more or less ambitious attempt at a laboratory. With this change has not come that increase in scientific work which it was thought would be inaugurated when the microscopes, culture media, and staining reagents were purchased. The causes for this were pointed out by Professor Brooks, of the Johns Hopkins University, in a recent address. He says: "Opportunity does not make success, for the greatest success in science, as in all other works, has

been won by men who make their own opportunities. A good horse helps the traveler on his way, but he who rides because he is not able to walk is not likely to make a long or successful journey. Some tell us that there is a law of evolution, a necessary principle of universal progress that carries things along; that the great advances in scientific knowledge which have been made in our day will continue to run by virtue of this principle; that if the heirs of all the ages will but wait until they come to man's estate, their inheritance will drop into their laps. I have no patience with this sort of nonsense. Natural laws are not agents to do things, but generalizations from an experience which seems to teach, among other things, that progress is neither necessary nor universal. I am sorry to say that my own experience of life tells me that it is unfortunately a little easier to stand still or to slip backward than to go up-hill. The one necessary law of progress, that I can discover, is that it is necessary to fight pretty hard for anything that is worth getting, and that it is no light nor easy task to keep what has been won. There have been dark ages in human history, and periods of great intellectual activity have been followed by periods of stagnation and decay. Natural knowledge is not like the corn that grows while we sleep; for if the price of civil liberty is eternal vigilance, the price of intellectual liberty is vigilance more alert and untiring."

This serves to teach us, if we have not already grasped the idea, that microscopes, tubes, and beakers do not constitute a working laboratory, but in the warfare of science it is the man behind the microscope, just as in the struggles of armies it is the man behind the gun, who accomplishes results.

VISION AND HEARING TEST IN THE PUBLIC SCHOOLS.

The *Cleveland Medical Gazette* contains a description of the methods employed in the public schools of the city of Cleveland for testing the eyes and ears of the children by the teachers. Some time since the teachers were instructed to especially observe children whose sight or hearing was defective. This led to the discovery of so many cases having obvious defects that it was determined to extend the examination under the supervision of the teachers to all children. This has revealed many cases of imperfect vision, particularly those cases where it was confined to one eye. Thus, in nearly 12 per cent of the children in one building one eye was found emmetropic, while in the other vision was

impaired from 20–30 to 20–50. In scarcely any of these cases did the children or their parents realize that anything was wrong. These tests have been found to bring the teacher in closer contact with the children, and in many cases have revealed that what was formerly attributed to laziness and stupidity has been due to an inability to hear or see the explanations of the teacher.

In testing, Snellen's type was used. When the test is made other pupils are not present. The scholar is placed at a distance of twenty feet from the test letters. The left eye is then covered with an opaque object not pressing on the eyeball. The pupil is then instructed to begin reading the largest letters, and his power of vision is thus ascertained. The teacher is especially requested to observe in those who have normal visual acuity if the eyes tire easily and are red after work; if they itch and burn and sometimes water; if they ache after work, or if headache is present.

In testing the hearing power, that which is described as Gale's test is used. The pupil is placed in front of the blackboard, and the teacher stands behind him and speaks in the ordinary tone used in teaching. Numbers are pronounced, and the pupil is requested to write them upon the board. If the pupil does not hear well, the teacher advances toward him, dictating the numbers until that point is reached at which the pupil hears. This determines the distance from the teacher's desk at which the pupil should sit in the room.

This work in the Cleveland schools marks a distinct advance in the study of the capacities of children in our public schools. Heretofore the expense of professional testing has been considerable, and one which school boards have been loath to assume. We believe, however, that at certain periods all pupils should be examined by a physician, but until this time is reached the method of having the teachers test the eyes and ears is such an important advance that it is worthy of recognition and putting into practice.

PROFESSIONAL INCOMES.

The relative incomes of Chicago doctors and lawyers was discussed in a recent editorial in the *Chicago Times-Herald:*

"Attorneys are not paid salaries. It is doubtful if the average income of lawyers in Chicago is $1500. But that is because the average is reduced by the large number of failures and of young lawyers who scarcely make their board during the early days at the bar. There are a few law firms in Chicago which make from $50,000 to $100,000 a year; perhaps twice as many from $25,000 to

$50,000; many from $5000 to $25,000; perhaps 500 from $2000 to $5000; and the multitude from $2000 down to nothing.

"Of physicians the same is true on a reduced scale. We doubt very much if the average income of doctors in Chicago is $2000. The city is full of young M.D.'s without enough practice to give them a personal atmosphere of disinfectants. One or two successful specialists may make as high as $50,000, but the fingers of one hand would probably keep track of the regular practitioners who can count on $25,000 a year."

That there is much of exaggeration in stating personal incomes is undoubtedly true. The writer of this editorial not long since met a *confrère* on a street-car while journeying to the central part of the city. He incidentally exchanged the time of day and inquired how his friend was getting on. His friend volunteered the information that he was not only prosperous, but accumulating not a little of this world's goods, his income reaching well above the $10,000 mark. In a conversation the same afternoon with the landlord of a building in which many physicians have their offices, he was asked if he knew of a physician who cared to rent part of a suite of offices which were occupied by the same physician who had told him in the forenoon of his very prosperous condition. The landlord stated that the physician in question had been unable to retain his offices, as he could not pay the rent.

The truth of the matter is that in our large cities the effort to obtain practice and a professional income is becoming more and more difficult. Competition is keener and personal incomes have diminished rather than increased, even among those who have fairly good practices. The amount of work which a man can do with modern helps—rapid transportation, hospital service, and other conveniences—is so much greater that we are safe in saying that case for case the professional income has decreased markedly in the last few years, notwithstanding the occasional hypertrophied fee given for some surgical operation.

LIQUID AIR.

The popular interest excited by the wonderful discoveries in the realm of physics has found its echo among medical men. Ever since the wonderful properties of liquid air were first described, the thought has been in the minds of the profession, Will this substance prove of use in the treatment of disease? At first liquid air was regarded as something of a curiosity, but since it has been produced

upon a scale that would enable it to be used in medicine it has found as yet very little application. One experimenter has used it in cancerous growths that could not be removed by the knife. It acts by freezing the part, destroying its vitality, and there is a sloughing of the diseased tissues. Whether this application is of greater value than when the tumors are destroyed by freezing with ethyl chloride or other substances remains to be seen. Undoubtedly valuable applications will be found for it in the sick-room in relation to ventilation, cooling the atmosphere, and perhaps a way may be found to apply it to safely reduce the temperature of fever patients. Unfortunately no practically useful container has yet been found in which liquid air can be transported. Although numerous experiments have been made as to a possible germicidal action of this substance, the consensus of opinion to-day is that the extreme cold produced by it does not destroy microorganisms. These experiments so far have related to the destruction of microorganisms contained in culture media, and it is possible that it may prove to be useful in anaerobic germs such as the tetanus bacillus, as liquid air in returning to a gaseous state gives off enormous quantities of oxygen.

In New York there is a liquid air and refrigerating company which manufactures thirty gallons of liquid air an hour. They have invented a container for transporting and storing liquid air in such a manner as to make it available in a limited way for medical and surgical purposes. It is a modification of the same principle which is employed in the manufacture of the liquid, namely, the use of the cold generated by expansion of the liquid. The container is surrounded by two coverings each separated by spaces, valves equalizing the pressure. In this way liquid air is kept surrounded by two chambers, each of which contains the vapors of liquid air and so keeps down the temperature of the substance that it evaporates with great slowness. The cost of liquid air with the improved machinery now in use is said to be about twelve cents a gallon. With further improvements it is hoped to reduce this to about three cents a gallon.

SEMIPAUPER INSANE.

A class of insane for which neither the law nor private charity makes provision is that large contingent whose friends are able and willing to pay for their care and treatment, but are not able to meet the charges of a private institution. There are no retreats for the insane belonging to the private class in which a patient can

be received for less than twenty or twenty-five dollars a week. If patients are especially troublesome, this sum must be increased if the institution is to derive a profit from the care of an individual case. For the most part these institutions are conducted not as charities but as business enterprises; consequently the cost must be considerable if they are to be kept whole.

The policy observed by the State of Illinois in its State institutions makes every inmate a pauper, though there is a distinction made in the asylums for the insane between those who provide their own clothing and those who are furnished by the State. The latter alone are termed paupers, and the State exacts a bond from these patients for the payment of such bills as shall be contracted for the payment of the clothing, and also conducting them to and from institutions. There is a large class of individuals who would gladly pay from five to ten dollars a week for their friends and relatives, providing a place could be had in which they could be cared for at such a sum. There is no reason why the State should insist upon taking these patients for nothing, as must now be the case, because they cannot be placed in private institutions. If the State does not care to take pay from the friends of patients in institutions already organized, then it would be well to build another institution which should receive pay patients alone, and at a cost which shall be considerably below that at which accommodation is furnished by the private institutions, but shall still be sufficient to provide for the maintenance of such an institution. This could undoubtedly be done if the State were to purchase a site and erect the buildings, thus furnishing the necessary capital and limiting the charge to a sum sufficient to maintain the institution.

PROPAGATION OF DISEASE BY INSECTS.

The studies which have been made upon the relation of malaria to mosquitoes have stimulated inquiries in other directions. Leprosy, we are told by one writer, must now be added to the list of diseases which are or may be transmitted by parasites. Alvarez has brought mosquitoes in contact with leprous sores and has subsequently examined the mosquitoes and determined that they contained a bacillus not distinguishable from the lepra bacillus. Unfortunately, this bacillus is not readily distinguished from similar microorganisms.

The relation of flies to the spread of typhoid fever in the camps during the late war with Spain was suspected, and by many of the

physicians in charge of these camps was believed to be one of the important means of distributing the infection. Experiments show what an active factor flies may be in the dissemination of germs. Flies were fed on bouillon cultures of anthrax and other germs and then placed in shallow dishes in such a way that they would rest or walk upon agar surfaces. The results obtained were striking and most instructive as to the possibility of the dissemination of germs by such insects. Every movement of the fly over the sterile surface of the plate was marked by the deposition of hundreds of germs which subsequently grew, the colonies tracing the pathway of the fly across the surface. It is easy to see how an infected insect could inoculate milk or other foods which would prove an efficient culture medium.

Denevre believes that bedbugs may transmit tuberculosis. He rests his opinion upon the rather narrow observation of a patient who acquired tuberculosis after having slept in a bed which had been occupied by a person who had died of the disease. Examination of bedbugs from this bed showed that they contained the bacillus of tuberculosis in large numbers, and that these same bugs would infect guinea-pigs.

Anthrax is said by some writers to be spread by flies, but it is denied by others. Nuttall's experiments show that the plague bacillus may infect the bodies of flies and that these insects may survive several days after infection. Septicemia, pyemia, erysipelas, and recurrent fever have been found to follow insect bites.

THE VALUE OF MERCURIAL INHALATIONS.

Mercurial inhalation in those diseases in which we wish to administer considerable quantities of mercury has long been considered valuable. The inunction method is claimed by many to be essentially an inhalation. It is asserted that the rubbing of the mercurial ointment upon the surface causes it to be vaporized by the heat of the body, and in this way it is inhaled by the lungs and we have constitutional effects. We do not know that this has ever been experimentally proven, but there are some facts which tend to show the correctness of the view. Last year a Swedish physician described what he terms the "pillow-slip" method of administering mercury. In its application the mercurial ointment was rubbed upon the outside of a small Canton flannel bag. It was then inverted and tied on the patient's chest. Patients who wore this were observed to promptly come under the influence of the mercury.

In a hospital in Germany, in which this method was tried upon a patient, a man occupying an adjoining bed in the same ward showed the constitutional effects of the drug, though at the time he was not under its treatment. It was believed by the physician in charge that the mercurial vapors given off by the patient who was being treated in this manner had affected his companion.

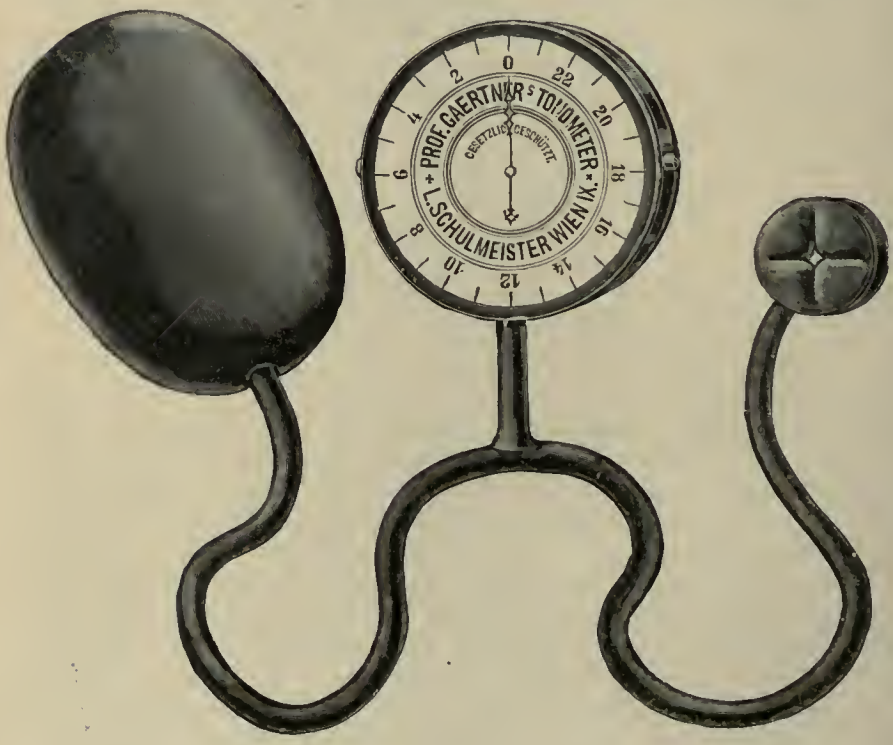
Kutner, in the *Berliner Klinische Wochenschrift* of January 8, 1900, describes a somewhat similar method, but the inhalation is under the direct control of the patient. A box is prepared, and mercurial ointment is smeared upon its sides and upon gauze strips placed in the box, somewhat after the plan of the Allis ether inhaler. The box has a suitable bulb for pumping air into it, and a mouth- and nose-piece through which the patient may inhale. It is claimed that an inhalation of about one-half hour, two or three times a day, will promptly bring the patient under the influence of the drug. Each inhalation should be followed by a mouth-wash. In this way stomatitis and salivation are less frequent. Indeed, it is claimed that these complications are less frequently seen with this direct application of the vapor for a short time than they are where the drug is rubbed upon the skin or used between two layers of cloth, as in the pillow-slip method.

ABSTRACTS.

MEDICINE.

Gaertner's Tonometer.—

H. L. Shaw, in the *Albany Medical Annals* for February, 1900, has a description of this new instrument for determining blood-pressure. He refers especially to its value in determining arterial tension in childhood. A series of experiments were undertaken in the Anna Kinderspital, in Graz, Austria, the tonometer being employed. The instrument consists of a small pneumatic ring connected by rubber tubing with a mercury manometer and a rubber ball, the whole being tight. Pressure on the ball forces air into the pneumatic ring and mercury bulb, the amount being accurately recorded on the scale. The ring is then placed over a phalanx of a finger which has been made anemic, and a sufficient pressure is



made on the rubber ball to compress the digital arteries. This force is slowly reduced, until the pressure exerted by the ring upon the arteries is the same as that of the blood-stream upon the ring. The instant this occurs the finger becomes hyperemic, and the amount of pressure recorded by the manometer is the same as the arterial tension.

The chief advantages of this method lie in the ease and rapidity of its adjustment and in the use of the sense of sight in making the determination. In determining the blood-pressure, it is necessary to empty the finger-tip of blood before placing the ring over the finger. This is accomplished by slipping a small rubber band over the finger-tip and rolling it down the finger. If the hand is cold, it is impossible to obtain a correct reading. Careful measurements were made in forty-five children, the blood-pressure being found to range uniformly from 90 to 110 millimeters. Variations were found in the same patient, but were slight and never exceeded 10 millimeters. In eleven cases the pressure in the right hand was constantly greater by a half millimeter than in the left. The reverse condition was found in four cases. In pneumonia the blood-tension was slightly above normal; in one case it registered from 115

to 125 millimeters. In acute endocarditis the tension is somewhat below normal. In acute nephritis in children increased tension is by no means constant. In diphtheria, when there is cyanosis or dyspnea, with or without the intubation tube, the arterial tension is increased. The amount of blood-pressure can be of help in diagnosis. A five-months old child was brought to the out-patient department with puffy lids and general anasarca. It was thought to have postscarlatinal nephritis, as there was some desquamation, but no urine could be obtained for examination. The blood-pressure was 75 millimeters. Later examination showed that there was no involvement of the kidneys, but a myocarditis, which is often accompanied by low arterial tension.

Disinfection of Rooms with Formaldehyde Gas.—

A. W. Fairbanks and E. Grawitz, in the *Boston Medical and Surgical Journal* of December 21, 1899, give an experimental study of disinfection by formaldehyde carried out in the City Hospital of Charlottenburg, Berlin. It was experimentally proven that two grammes per cubic meter of air space is efficient against the ordinary infectious germs such as typhoid, diphtheria, and even anthrax, wherever the gas is allowed free access to the organisms. Even if protected, most bacteria are killed. Large pieces of tissue, such as diphtheritic membrane, masses of purulent material, are not rendered sterile by the gas. This matters little for all ordinary purposes of room disinfection, as these can be readily removed by means of a damp cloth. It is important that the dust that has become infected and fallen to the floor of the sick-room be thoroughly disinfected, and this is accomplished by exposure to formaldehyde gas.

Grawitz formulates the following directions in room disinfection: All bed linen, body linen, and mattresses are to be disinfected by steam. Particles of pus and sputum found upon the floor are to be removed with cloths dampened with sublimate solution, and are then to be burned. All objects in the room are to be removed from the walls, and laid over the backs of chairs, or be so placed that the gas has access to all sides. Curtains are to be placed so that the entire surface hangs free. Windows and other openings are to be tightly closed. At the end of twelve hours the doors are to be opened, dust collected and burned, the room aired and again made ready for use. He claims that this method of disinfection is much more convenient than the very laborious process of rubbing the walls with bread, washing furniture and floors with carbolic solu-

tion, and sterilizing every possible article with steam. The method does not injure delicate fabrics, and the odor of the disinfectant disappears in a short time.

A Case of Pseudodiphtheria.—

F. L. Stillman, in the *Columbus Medical Journal* of December 5, 1899, describes the case of a young man 22 years of age, who, previous to coming under observation, had good health with the exception of recurrent attacks of tonsillitis. He was a volunteer in the late war with Spain, and had an attack of malaria alternating with occasional diarrheic seizures. Upon examination the symptoms were not marked. There was slight elevation of temperature, the breath had a sweetish, disagreeable odor, and the tongue was covered with a thin white coating. The tonsillar crypts were enlarged, containing some yellowish débris. On the left tonsil was a whitish pseudomembrane covering two-thirds of its surface. At first the membrane was furfuraceous and was not easily removed. The underlying surface bled easily, and the entire tonsil was red and swollen. On the gum and cheek of the left side, near the wisdom tooth, was a membrane of similar character. An examination was made at once for the Klebs-Loeffler bacillus, but was negative. The following day a membrane appeared on the right tonsil similar in character to the other membrane. The treatment consisted of a spray of corrosive sublimate, 1-to-2000, and frequent gargling with a moderately strong solution of permanganate of potassium. After two days salicylate of sodium was given internally, and was then changed to iron. At the end of a week he was no better; in fact, the membrane on the right side had extended. A culture made at this time from the membrane covering the left gum showed the streptococcus exclusively. The exudate on the right side showed staphylococci in practically pure culture. Examination of the fresh blood, without fixing or staining, showed crenated disks, and the red cells were unusually pale. There were no plasmodia nor pigment granules. Leucocytosis was not present, and the total number of red cells exceeded five million. The duration of the disease was three weeks.

Splenic Anemia.—

William Osler, in the *American Journal of the Medical Sciences* for January, 1900, gives a description of fifteen cases of this disorder. The term splenic anemia has been used by some authors, and those who accept the term are in doubt as to what relation the

anemia and the enlargement of the spleen bear to each other. There is, in these cases, an idiopathic enlargement of the spleen with anemia and without lymphatic involvement. In the fifteen cases enlargement of the spleen seems to have preceded the anemia. The patient suffered no inconvenience from it, and as a rule did not know of its existence. In one case there were recurring attacks of pain in the region of the spleen. In all the spleen was large, reaching nearly to the navel, but in only one was it enlarged *ad maximum*. Of the fifteen cases, eight had hemorrhage from the stomach; in seven of the cases this was the feature for which the patient sought relief. In one of the cases hemorrhage had recurred over a period of twelve years. Ascites was present in three cases. In one of the patients who had had three severe attacks, the liver at autopsy showed no trace of cirrhosis. In no case were the external lymphatic glands enlarged. The anemia varied from a slight pallor to a form as intense as that met with in pernicious progressive anemia. Marked bronzing of the skin was present in these cases; in one it was as pronounced as in an advanced case of Addison's disease. There was a relatively high blood-count; in six cases the reds exceeded four million, falling below one million in only one case. The hemoglobin was estimated in only four cases, but was invariably found to be low—far below the corpuscle index. The number of leucocytes was low. Of the thirteen cases in which these were counted, there were nine in which there were less than five thousand per cubic millimeter.

Multiple Gangrene in Malarial Fever.—

William Osler, in the *Johns Hopkins Hospital Bulletin* for February, 1900, says there are three groups of multiple gangrene—Raynaud's disease, multiple spontaneous gangrene of limbs, and multiple spontaneous gangrene in association with the acute infections. This condition is noted in measles, typhoid fever, typhus fever, scarlet fever, diphtheria, and malaria. The gangrene in the acute infectious diseases is not symmetrical. The case which Osler describes is that of a bartender, aged 23. When six years old the patient had malaria. Five years before coming under observation he had a severe attack of typhoid fever, followed by an abscess in the abdominal wall, which opened spontaneously and discharged for two months. The patient had been living in Baltimore and was well until October, when he was confined to his bed for nearly two weeks with pains in the back and general weakness. Shortly after going about, blebs were noticed about one-half inch in diameter on

both hands, which were slightly swollen. On the next day a mottled area appeared on the instep of the left foot. Similar changes were noted on the buttocks and dorsum of the right foot. The hands and feet were swollen; the blebs broke, and discharged a dark fluid. Though the history did not suggest malaria, the spleen was found to be enlarged, and an examination of the blood showed large numbers of estivo-autumnal organisms. The crescents were in unusually large numbers. Cultures taken from the blood proved negative. There was no leucocytosis and the differential count was normal. Under quinine the crescents and ovoids slowly disappeared, the sloughs separated, and the ulcers healed.

Nervous Dyspepsia.—

Boardman Reed, in the *International Medical Magazine* for January, 1900, says that conceptions of this disorder have been as varied as the authors who have written upon it. In probably one-half the cases there is actual structural change in the gastrointestinal tract. It may also be associated with organic changes in other organs, in which case the term should not be used. Gastric disturbances are common in general neurasthenia, and occasionally neurasthenic symptoms seem to be limited to the stomach. The term should be strictly limited to the apparently causeless dyspepsias, and these are closely associated with neurasthenia. A symptom of importance in diagnosticating the condition is a lack of relation between the amount of indigestion and the quantity of food taken. The true nervous dyspeptic often complains as much after eating plain bread and butter or beefsteak as after a mixed meal. The diagnosis must be largely by exclusion, and it is often difficult to distinguish between these cases and catarrh, ulcer, and incipient cancer. The disease is generally curable, if uncomplicated. In its treatment the Weir Mitchell rest cure is often valuable, but it is important that this should be followed by a complete change in habit and the substitution of an outdoor active life for a sedentary one. These cases call for a regulation of the diet, which should be nutritious. The drug treatment should be the same as that generally employed in neurasthenia.

The Most Destructive Occupation.—

In a recent article in the *Journal of the American Medical Association* of December 13, 1900, W. W. Betts reports a case of chalicosis pulmonium. By this he understands a chronic interstitial pneumonia induced by stone dust. It is sometimes spoken of as stone-

cutter's phthisis, or miner's consumption. He has carefully studied the death-rate from this form of phthisis in one mill, and finds that while the numbers are exaggerated by some, by others they are placed too low. The actual death-rate, as ascertained by himself, is appalling. Every man who works in these ore-grinding mills from two to three weeks is subject to attacks of acute bronchitis followed by a soreness of the trachea and bronchial tubes. This is followed by pain in the region of the stomach, loss of weight, and shortness of breath. The respirations increase from thirty-eight to forty-two per minute, and are aggravated by slight exertion. There is a marked loss of weight. The pulse ranges from 90 to 120. As the disease becomes more marked in its later stages, the temperature rises from 102° to 104°. The statistics of one of these mills is something appalling. In the five years of its operation, with a list of employees averaging about fifty, it is estimated that a thousand men have been incapacitated. The mill runs continuously, and the employees are divided into three shifts, to work eight hours each. One of these shifts, consisting of eighteen men, are all dead. A tabulated list of thirty cases is given, the men averaging 30 years of age with an average weight of 170 pounds at the time they entered the employment. The time that they worked in the mill averaged fourteen months, and the average duration of life after leaving the employment was ten months.

Gall-stone Crepitus and Friction.—

J. M. Anders, in the *International Medical Magazine* for December, 1899, says that gall-stone crepitus is a valuable symptom, but the literature is practically silent upon the subject. The sign is noted in a comparatively small number of cases, but it is not sought for as thoroughly as its diagnostic value deserves. In cases of gall-stone in which symptoms are doubtful, valuable confirmatory evidence is furnished by this sign. In examining for gall-stone crepitus, the patient should lie upon the back with the legs flexed upon the abdomen. In this position gentle but deep palpation over the gall-bladder is made. If crepitus is not obtained in this manner the finger-tips should be pressed into the abdominal wall just below the fundus of the gall-bladder and then turned upward over the organ as though making an attempt to roll the fundus upward and forward. This failing, the patient should be told to inspire deeply, though slowly. This carries the gall-bladder downward and forward, and during its excursion the examiner, while palpating, should make gentle counter-pressure with the finger-tips. When

palpation fails, auscultation should be practiced, as by this means a friction may be heard. In one of the cases reported in which the gall-bladder was filled with calculi, combined auscultation and palpation detected a friction sound after other methods had failed. The stethoscope should be placed just below the costal arch, so as to afford space for palpating over the fundus of the enlarged gall-bladder with the finger-tips of the free right hand.

The Clinical Uses of the Sphygmograph.—

R. Vansauvoord, before the New York Academy of Medicine (*Medical Record*, Jan. 6, 1900), said one of the chief uses of the sphygmograph is to enable one to detect high arterial tension in its earlier stages. An increase of tension is generally shown by a flattening of the top curve, though it may appear when the arterioles are strongly contracted. The character of the pulse, determined by the finger on the radial artery, is often far from true and may mislead even the experienced physiciau. The chief objection made to the sphygmograph has been due to faulty application on the part of different observers. The spring pressure must be carefully graduated not only to the arterial tension, but also to the caliber of the vessel. Failure to place the center of the pad directly over the artery sometimes results in a distorted tracing. Occasionally arteries are found which are too small to give a good tracing, and the same is true where the action of the ventricles is very weak.

In the discussion, Bishop said that one must be guided more by the shape of the tracing; that tracing which gave the best picture was ordinarily the most correct. Berg was of the opinion that the sphygmograph was not a reliable instrument, nor a practical one. An irregular pulse might often be shown graphically in this manner, but practically the same information could be obtained by examination with the finger.

The Relation of Migraine to Epilepsy.—

W. G. Spiller, in the *American Journal of the Medical Sciences* for January, 1900, reports two cases in which migraine and epilepsy were associated. He discusses the literature of the subject. He says that attacks of migraine occur associated with nausea and vomiting; these form what is known as simple migraine, which usually remains unaltered during the life of the patient. In other cases visual disturbances are associated with the migrainous attacks, and in these it is spoken of as ophthalmic migraine. The attack may also be accompanied by transient paralysis of the muscles of the

eye. The ophthalmic forms of migraine are especially related to epilepsy, and may precede by many years the convulsive seizures of the latter disorder. In most cases of migraine no convulsive seizures are ever detected. In the majority of cases epilepsy appears in the form of one or more of the disturbances seen occasionally with migraine, and later convulsions may develop. The disease may be epilepsy from the beginning. It matters little, with our uncertain knowledge of the pathology of the two diseases, whether we regard these as abortive cases of migraine that later become associated with epilepsy, or as abortive forms of epilepsy in which late in the disease the convulsions become apparent. The important thing is to recognize a relation between some of the forms of migraine and epilepsy.

Pruritus Ani.—

J. P. Tuttle, in the *Medical News* of January 27, 1900, says he is not a believer in pruritus ani essentialis. The constitutional condition underlying this symptom he recognizes as an important element, but insists that there is always an existing cause for the disturbance. This should be earnestly sought and relieved at the same time; where apparent causes are found, such as fissure, fistula, hemorrhoids, and condylomata, the removal of these may not remove the symptom. Of course, obvious structural changes should be corrected before instituting local treatment, the latter depending largely upon the judgment and experience of the practitioner. Hot water is usually acceptable, but sometimes cold is more so. Carbolic solutions, black wash, salicylic acid, chloral hydrate, chloride of calcium, extract of conium, extract of strontium, camphor, cocaine, etc., all have their uses. A combination upon which he relies more than others is carbolic acid 10 to 20 parts, salicylic acid 2 to 10 parts, boric acid 5 parts, glycerin or cold cream 100 parts. He has used ichthyol with benefit when there is pain. The judicious application of such treatment he believes will relieve nearly all cases, and will make it unnecessary to resort to curetting, actual cautery, or the dissecting away of the itching surfaces.

Isolating the Phthisical Insane.—

Eric France, in the *Journal of Mental Science* for January, 1900, points out the necessity of a change in the present methods in dealing with the phthisical insane. He gives some interesting statistical studies as to the causes of deaths in asylums in England and Wales. One of these tables includes death from all causes, in the period from 1895 to 1898 inclusive. The total deaths were 28,841, and the aver-

age daily number of patients was 303,632. The seven leading causes of death in the order of frequency were as follows: General paralysis, tuberculosis, heart disease, pneumonia, nephritis, cancer, and colitis. Isolation he says is the remedy for the enormous death-rate from tuberculosis among the insane, but a striking difficulty is the diagnosis in this class of patients. The frequent suppression of physical signs has led him to rely almost entirely upon subcutaneous injections of Koch's original tuberculin. The difficulty of obtaining sputum for examination in the case of the insane is well known. His own method is to carefully weigh the patients each month, and every one who has lost five pounds or more, which loss cannot be accounted for by obvious mental or physical conditions, is placed upon the suspected list and examined by the tuberculin test.

Chemical Preservatives in Food.—

A. G. R. Fullerton (*The Lancet*, Dec. 9, 1899) says that the common practice of preserving milk by formaldehyde and boric acid should be prohibited by law. Not that the quantity of the disinfectants is sufficient in the majority of cases to disturb the adult digestion, yet it may do so in the case of infants and invalids. The necessity for legislation on this question lies in the fact that these preservatives are, in the quantities used, tasteless and so cannot be detected by the consumer. If preserved milk could be distinguished from fresh milk as readily as salted beef can be distinguished from fresh beef, no necessity for legislation would arise. The consumer would know exactly the kind of article he was buying, and there the matter would end. There would then be no reason for prohibiting the sale of preserved milk any more than there would be for prohibiting the sale of salted beef on the ground that the latter was not suitable for making beef tea for invalids. As the public has no means for distinguishing between fresh and preserved milk, special legislation seems necessary. The sale of preserved milk as fresh milk should be prohibited by severe penalty.

A Case of Traumatic Periodical Paralysis.—

Julius Donath, in the *Wiener Klinische Wochenschrift* of January 11, 1900, describes the case of a young woman 25 years old, who, as a result of a collision, was thrown with some violence from a wagon. Her foot was strained, but otherwise there were no severe injuries.

On the third day after the accident she suddenly became paralyzed over the whole body. Ten similar attacks occurred during the next five days that she was in the hospital. After she was taken to her home she was in bed for six weeks, with a frequent recurrence of the same seizures. The most interesting feature of the paralysis was its rapid appearance, involving all of the four extremities, and its abrupt disappearance. Consciousness was at no time affected. At all times the eyes, facial muscles, and tongue could be freely moved. Each attack was followed by perspiration. In the periods between the attacks the knee-jerks were somewhat increased.

Meralgia Paresthetica.—

J. H. Musser and Joseph Sailer, in the *Journal of Nervous and Mental Diseases* for January, 1900, describe under the above term that group of cases in which there is a disturbance of sensation in a small oval area on the outer side of the thigh. The symptom is usually unilateral and is characterized by burning, tingling, numbness, or distinct subjective pain. There is usually a diminution of one or more forms of sensation. They report ten additional cases and summarize those which have been reported in the literature. These show that the disease is most frequent between the ages of 30 and 60, and is most frequent in males. The right and left thighs were equally affected, and in twenty out of eighty-four cases the disease was bilateral. Regarding the causes of the affection but little can be determined, although traumatism seems to predominate. It was associated with other nervous diseases in eleven cases.

Pathology of Sympathetic Ophthalmia.—

M. Zelenkowsky (*Vratch; La Presse Médicale*, Jan. 10, 1900) gives an experimental study of this striking phenomenon in which the sound eye becomes involved. Two theories have largely prevailed: One, the so-called nervous, by which some peculiar atrophic disturbance was supposed to be transmitted along the optic nerve and chiasm; a second theory attributes the disease to the direct transmission of microorganisms. A later view is that of Beliarminow, who attributes the disease to the direct transmission, not of the bacteria, but of their toxins. Zelenkowsky has confirmed this theory by experimental work, injecting pure toxins into the posterior chamber of the eye. This produced atrophy of the globe, which was operated upon, and a characteristic sympathetic ophthalmia ensued. The passage of the toxins was attributed to the lymphatic vessels in the optic nerve.

Progressive Ankylotic Rigidity of the Spleen.—

B. Sachs and J. Fraenkel, in the *Journal of Nervous and Mental Diseases* for January, 1900, said that the published cases show that there are two types of this disease. Von Bechterew described one phase in which there is chronic rigidity of the spine often limited to the cervical region. The symptoms of root disease of the spinal cord predominate. The anatomical findings show a chronic leptomeningitis with degeneration of the spinal nerve roots and spinal cord changes. The vertebral joints are not affected.

Another type, described by Strumpell and Marie, shows a chronic rigidity of the spine with involvement of shoulder or hip joints and no root symptoms. The anatomical findings are ossification of ligaments, hypertrophy, and ankylosis of joints.

These two types of the affection seem to mark an essential difference in the location of the anatomical lesions. In one the trouble is primarily in the nervous system, and in the other it is in the joints and ligaments of the spinal column.

Hemophilia in the Negro.—

W. R. Steiner, in the *Johns Hopkins Hospital Bulletin* for February, 1900, gives an interesting history of a mixed half-breed family in which the hemorrhagic diathesis was well marked. But one other case of hemophilia in a negro is mentioned in the literature. This family began by the marriage of a Scotchwoman with a negro. The daughter of this union married an Irishman, by whom she had eleven children. Six of these were bleeders, four died young, and one lived to the age of 57. Two of the families descended from this union were free from the disease, but in another it persisted for three generations, all of the last being affected with the disease, including the patient, who is described. The description of the family shows the fertility of families in which this disorder persists, and also that a large number of those affected die young. The bleeding tendency was transmitted through the females, though both males and females were bleeders.

Traumatic Nephritis.—

Thomas J. Yarrow, in the *New York Medical Journal* of January 6, 1900, says that traumatic nephritis is rarely mentioned in the text-books, but it is possible that more cases may be due to trauma than is suspected. In nearly all accident cases of this nature the patients are discharged from hospitals as soon as they are able to walk, and are soon lost sight of. He describes the case of a boy

seven years of age who had been run over by a heavy wagon, the wheels contusing the right leg and the region of the right kidney. The temperature was below normal, but afterward rose above normal and continued so for nearly a month, but never going above 100° F. The interesting feature connected with the case was the occurrence of hematoidinuria, which continued until the blood-clot had been removed from the contused kidney.

Denuding the Skin with Caustic Potash in Vaccination.—

Frank S. Fielder, in the *Medical Record* of January 27, 1900, says that this method of denudation is less terrifying in children. It has an advantage over scarification, in the fact that no blood is drawn. The disadvantages are that it takes more time and it is difficult by this method to denude a small place; the vesicles are likely to be too large if the virus is very active. It is less certain than scarification, no matter how skilfully done, because of the formation of an eschar which interferes with absorption. He believes that this method of denudation is impracticable in wholesale vaccination. It may have some value in private practice in the case of a nervous child where it is necessary to avoid terrifying; in this way he may be spared the slight pain caused by scarification.

Diet in Typhoid Fever.—

Edward Speidel, in the *New York Medical Journal* of December 30, 1899, says that the most important thing to learn in dieting a typhoid patient is the proper distinction of the amount and variety of foods allowed. Early in the disease there should be an evacuation of the gastrointestinal tract and a total abstinence from all food for five or six days. Water should be administered at regular intervals during the waking hours, without waiting for the patient to call for it. From the onset of the disease a daily rectal irrigation with a few gallons of normal salt solution will cleanse the lower bowel and will also furnish considerable fluid to the system, as a certain quantity will be retained.

A Singular Pupilary Reaction in Meningitis.—

Albert Seitz, in the *Medical Record* of December 2, 1899, notes an abnormality in the pupils of both eyes during meningitis in a boy aged nine years. The case was tuberculous, and evidently secondary to hip-joint disease. The anomalous reaction in this case was that the patient's pupils contracted to the size of a pin-head in the dark and dilated widely in the light. The brighter the light,

the quicker and more widely they would dilate. The case was seen a few days later, a day or two before the death of the patient, when the same phenomenon was noted.

SURGERY.

The Schoenborn-Beele Splint.—

E. H. Lee, in the *Chicago Clinic* for February, 1900, says that this splint has been in use at the Julius Hospital in Würzburg for years, and has for the last seven years been employed by him at both the County and Alexian Brothers' Hospitals in Chicago. Among the advantages claimed for the splint are lightness and neatness; padding with cotton is unnecessary; it does not cause decubitus, and can be removed and replaced in a short time; it adapts itself perfectly to the limb, and the cost of the material is slight. The material used in the splint is hemp fiber cut to the length desired for making the splint. These bundles are placed parallel to the long axis of the limb and plaster of Paris is incorporated with the fiber, it having previously been mixed with water to the consistency of mush. If suspension is required rings are incorporated with the plaster and fiber. As soon as the splint is hardened it is tied to the limb by strips of bandages. When it is perfectly set a roller bandage may be applied along the entire length of the splint. In cases where the limb is covered with hair, these may be incorporated in the splint, but this is avoided by shaving, oiling, or placing a thin piece of linen between the splint and the skin.

Lee has modified the original splint by using roller bandages of plaster of Paris, which are first soaked in a warm salt solution and are then run up and down the limb, as many thicknesses of bandage, generally from five to eight, being used as are necessary to form a strong splint. In this way he makes a neat splint, which is quite as useful as where hemp is employed, and less assistance in making is required.

Before applying the splint the fracture should be perfectly reduced and the extremity placed in a position which favors retention. The splint should cover about one-third the circumference of the limb, and in fractures of the forearm and leg it should have a sufficient width so that the fractured bones are not pressed together by the bandage.

The application of the splint to fractures of the humerus is varied as to whether the fracture is in the upper, middle, or lower

third. In most cases it is necessary to employ the weight of the arm below the fracture to act as an extension. In the great majority of cases this is sufficient to overcome any deformity produced by muscular contraction. In fractures of the upper third the splint is not effective if it does not extend above the shoulder and practically immobilize the shoulder-joint. This is accomplished by a shoulder-cap. To apply the splint in fractures of the upper third the patient sits on a stool or stands. An assistant in front of the patient reduces the fracture and holds the arm in position in the following manner:

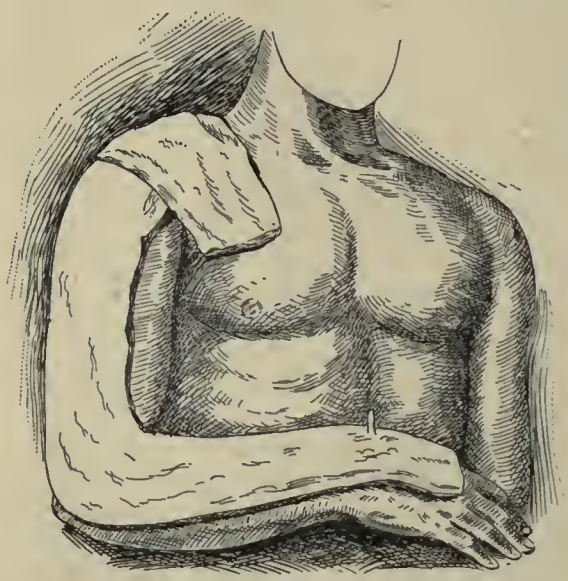


FIG. 1.—Fracture of neck of humerus. Immobilization of shoulder by shoulder-cap. Ring for suspension at wrist.

The forearm is flexed at an angle; the wrist is held with one hand, and two fingers of the other hand are inserted from below and behind into the fold of the elbow; a gradual traction is made until any longitudinal deformity is overcome. The hand is held in a position midway between supination and pronation, and the elbow a slight distance from the thorax. The forearm points forward and inward. The splint should extend well above the shoulder, reaching as far forward as the middle of the clavicle; in front it should reach below the clavicle as far as the third or fourth rib, and behind it should extend to the lower angle of the scapula. It should extend downward on the outer side of the arm about one-third of its width, to the external condyle, but the elbow-joint should be left free and

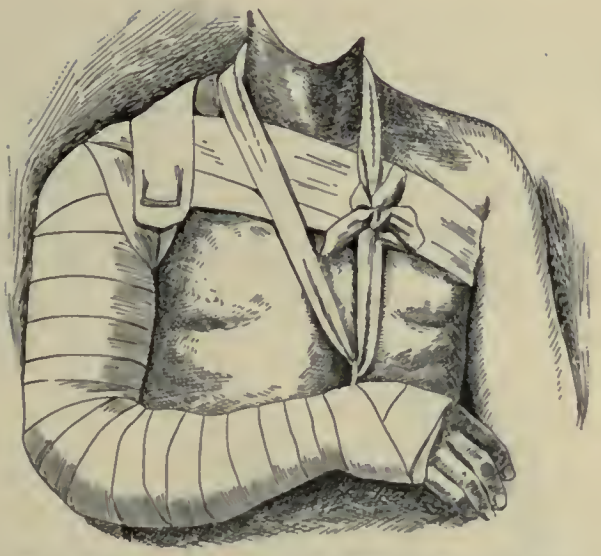


FIG. 2.—Same splint as in Fig. 1. Bandages and suspension applied

FIG. 3.—Splint for fractures of the middle and lower third of humerus. Ring for suspens on at wrist.

be in no way supported by the splint. It is then extended over the surface of the forearm to the wrist, where a ring may be inserted for suspending the forearm. In fractures on the middle third of the humerus the shoulder-cap may be omitted, but the splint should extend well up to the shoulder.

The advantages claimed by the writer for this method of treating fractures of the humerus are: the axilla is free, the thorax is free, a limited amount of motion is present which does not interfere with the fracture; a certain amount of ambulatory exertion is permitted which is of benefit in certain cases. The splint is easily removed and replaced.

FIG. 4.—Fracture of forearm with immobilization of elbow-joint.

The splint is applied in a similar manner in fractures of the forearm. In those of the elbow it extends from the middle of the arm to the ends of the metacarpal bones. In fractures of the forearm the splint may be constructed so as to immobilize the elbow-joint or not. In Colles's fracture the arm is placed over a pad midway between supination and pronation, and the splint applied as shown in Fig. 5.

In fractures of the lower extremity the splint is applied in the same manner to all fractures of the femur, whether of the neck or of the shaft. The patient is placed flat upon the back, the fracture is reduced, and the limb held in position. A small pad is placed under the knee so as not to have the knee-joint in full extension. The splint is then applied along the anterior surface of the leg, com-

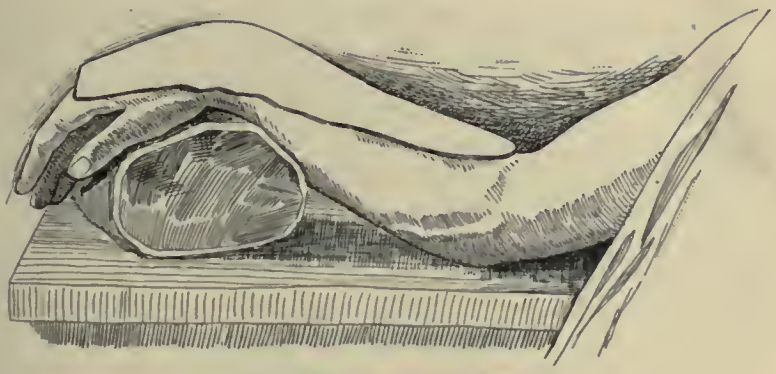


FIG. 5.—Splint for Colles's fracture.

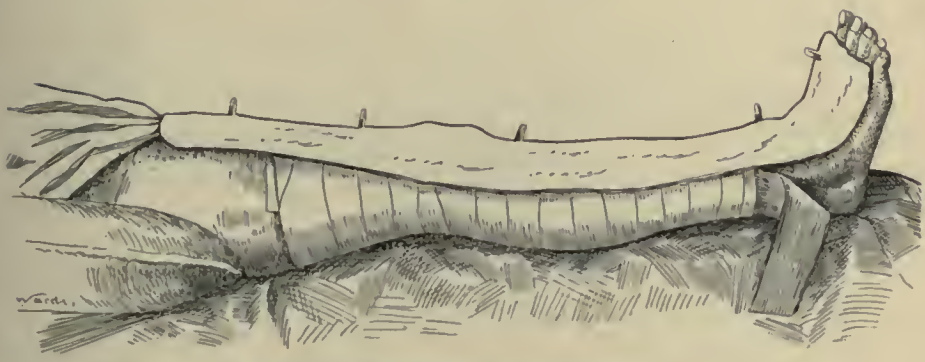


FIG. 6.—Anterior splint for fracture of femur.

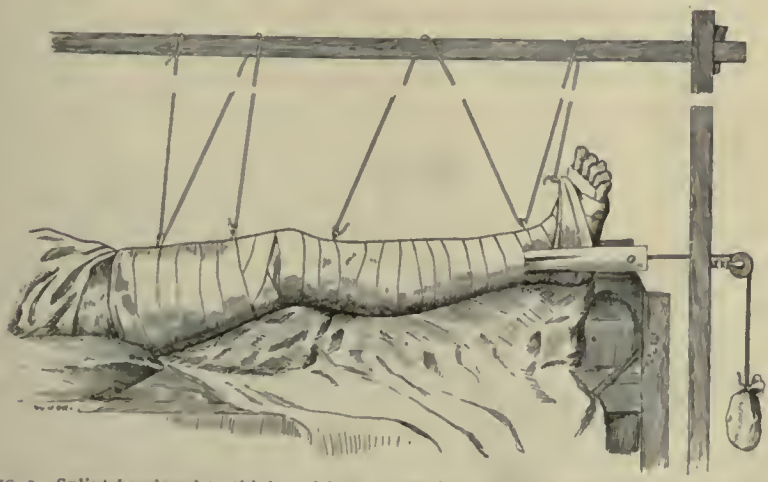


FIG. 7.—Splint bandaged to thigh and legs; extremity elevated, suspended, and extended.

mencing as high as possible in the inguinal region, covering about one-third of the width of the thigh and extending along the surface over the knee down the leg, and on to the dorsum of the foot as far as the toes. Four or five rings are inserted upon the upper surface of the splint, so that when suspended the leg will have a tendency to turn inward. After the splint is hard it is secured to the leg by means of roller bandages (see Figs. 6 and 7). It is now suspended by means of cords, which are run through the rings and fastened to a form suspended over the bed (Fig. 7). The extension strips,

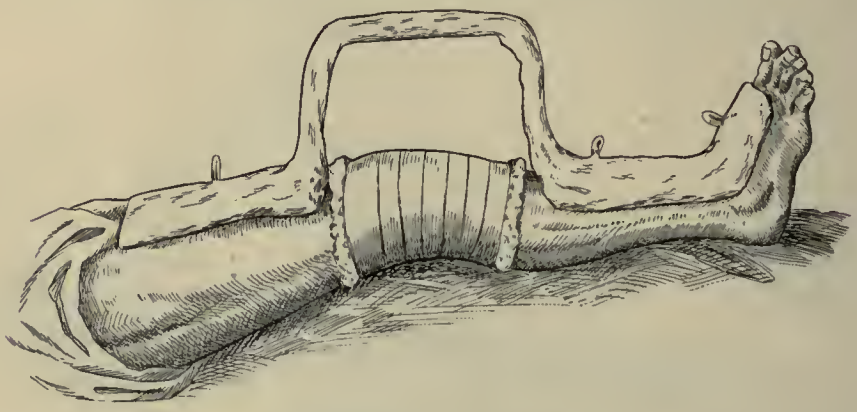


FIG. 8.—Splint for resection of knee-joint.

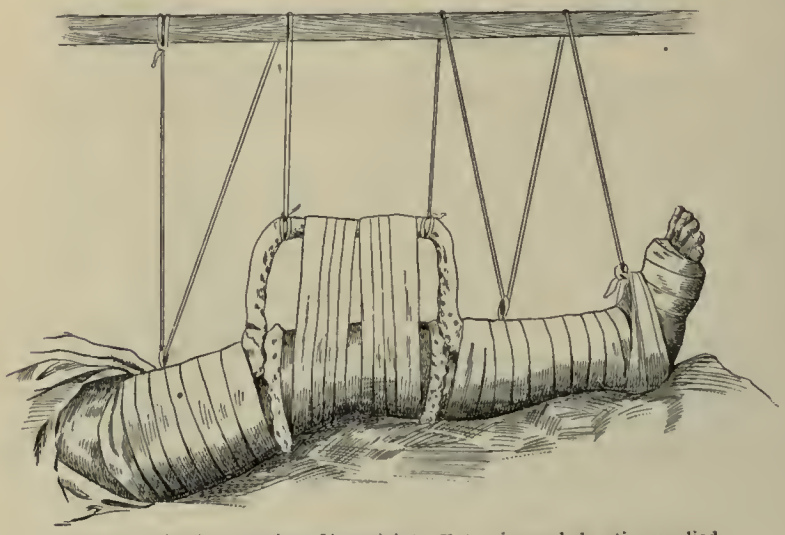


FIG. 9.—Splint for resection of knee-joint. Extension and elevation applied.

which were placed in position on both sides of the leg by means of circular bandages before the splint was applied, are attached to a cord which runs over a pulley through the end of the frame, and the necessary weight is attached to the cord. In applying the splint in this way we have elevation, suspension, and extension of the extremity. The leg swings on the suspended cords. The patient can move about in bed and is comfortable. The toilet of the patient and the bed is efficiently and easily carried out. In fractures below the knee the splint is applied in a manner similar to that in the forearm. The fractures are reduced by extension and the splint applied to the anterior surface of the leg. In Pott's fracture the foot is placed in forced inversion, as is customary in reduction of this fracture.

The splint may be used in resection of the knee-joint by molding a splint above and below the knee, and subsequently connecting them by a curved iron or steel brace. With a splint arranged in this way the dressings about the joint are easily changed without discomfort.

Drainage, with a Description of a Gauze Carrier.—

C. T. Cooke, in the *Northwestern Lancet* of February 1, 1900, says that the importance of early opening and draining of suppurating cavities, wherever found, is now admitted. Rapid removal of secretions is of great importance when tissues are once infected. This is easily accomplished where the parts are superficial and can be widely opened, but in abscesses which are deeply situated and can only be reached by small openings, drainage is often difficult. The ordinary dressing of some abscesses by gauze leads to a reinfection of the secretions, owing to the fact that the superficial layers along the sinus leading to the abscess are crowded down too firmly in order to get the deeper layer of gauze to the bottom of the cavity. To meet these difficulties, he has devised what he describes as a gauze carrier, which consists of a cannula which may be made of any desired caliber or length. It has ring handles and is armed with an obturator, which is used to carry the gauze to the end of the cannula. With this instrument an abscess can have its cavity easily and quickly filled with gauze; at the same time the layers nearest the opening will not be so compressed as to interfere with their function as a capillary drain. A distinct advantage of the gauze carrier is where it is necessary to deal with sensitive granulations, as the gauze does not adhere to them, and the applications are free from pain.

The Hockey-stick Incision in Appendicitis.—

Willy Meyer, in the *Journal of the American Medical Association* of February 17, 1900, says it should be the aim of every surgeon to make the original incision in appendicitis operations so as to restore the abdominal wall to as nearly a normal condition as possible after union has taken place. An incision which divides the oblique and transversalis muscles at right angles is justified only in cases in which adhesions and complications are present preventing the completion of operation through a comparatively small opening. The best site for the incision is where the abdominal wall is strongest, near the anterior superior spine. What he terms the hockey-stick incision is one which combines the numerous advantages of having the resulting scar in the thick portion of the abdominal wall, and it admits of the fibers of the oblique and transversalis being separated and not cut transversely; at the same time sufficient room is obtained, not only for the removal of the appendix, but for meeting any complications that may exist in the pelvis upon the right side. The incision begins above, midway between McBurney's point and the anterior superior spine of the ilium. It descends parallel with a line drawn from the pubis to the anterior superior spine, and when above Poupart's ligament on a line with the femoral artery, curves at an obtuse angle and is extended as far as the border of the rectus muscle. In making the horizontal part of the incision care must be taken not to injure the epigastric artery.

Electrical Burns.—

J. M. Elder, in the *Montreal Medical Journal* for January, 1900, quotes the conclusions of Dr. Sharpe, as set forth in the Year-book for 1899. In an electrical burn the part is at first dry and crisp—in some cases charred. The site is excavated and bloodless, with a surrounding zone of pallor. Within thirty-six or forty-eight hours oozing replaces the dryness, and the pallid zone becomes hyperemic. Sharpe is of the opinion that pain is practically absent during the first twenty-four or forty-eight hours. From this Elder dissents. In the two severe cases which he reports both patients suffered greatly from pain. Shock is directly proportionate to the amount of tissue involved. The prognosis in electrical burns is different from those caused by the direct application of heat. The time required to heal these burns varies anywhere from two to five times as long. The treatment of electrical burns is, on the whole, unsatisfactory. In the two severe burns reported by Elder the parts were immersed in a warm carbolic bath of 1 to 100. The

sloughing was extensive, and in both there was hemorrhage, which was only relieved by the application of an Esmarch bandage. Amputation in these cases is difficult, as it is rare that flaps can be formed even above the line of demarcation which will not slough. This applies especially to muscles, they being frequently destroyed as far as their attachment.

The After-effects of Ether Inhalation upon the Respiratory System.—

At a meeting of the Society of Anesthetists (*Lancet*, Feb. 10, 1900) Sidney Rumboll discussed the after-effects of ether inhalation upon the respiratory system. He stated that in 1500 cases of ether administration which had been preceded by gas there had been only one case of bronchitis, one of pneumonia, and four of slight bronchial irritation. These 1500 cases included every variety of surgical operation and were in no way selected; some had albumin in the urine, four had small quantities of sugar, and several had cardiac disease. In these anesthesias Mr. Rumboll used his own inhaler, which was carefully disinfected before each administration. An effort was always made to lessen the amount of ether employed so far as possible. The operating-room was always kept at a temperature of 70° F., and every care was taken to prevent undue exposure of the patient. The time of year seemed to make no appreciable difference in the amount of bronchial irritation, but in all cases where there was a previous catarrhal condition of the respiratory tract it was allowed to subside before the operation was undertaken. In the cases reported he believes that the one of bronchitis was due to a cold operating-room, and the pneumonia to a septic infection.

General Exploration of the Abdomen.—

J. Homans, in the *Boston Medical and Surgical Journal* of February 22, 1900, says it has happened to him to discover very happily in several instances conditions and diseases very different from the one for which he had opened the abdomen. It seems to him as wise as it is harmless to make a rapid examination of the abdominal organs other than those which are operated upon. He has three times removed gall-stones whose presence was unsuspected and whose removal did more for the recovery of the patient and perfect subsequent health than did the removal of the tumor for which the abdomen was opened. He does not recommend the lengthening of short incisions for the purpose of exploration. With an incision an inch and a half long for appendectomy, he would not enlarge it. Where a good-sized pelvic tumor or kidney necessitates a sufficiently

large opening to introduce the hand into the abdominal cavity, it is always well to make a thorough exploration particularly in the region of the gall-bladder. Gall-stones frequently give rise to obscure symptoms, which are with difficulty referred to their true origin. The same is true of the appendix, which will be often found diseased in connection with tubal and ovarian disorder.

Enucleation of the Eyes Twenty Years After Injury.—

P. C. Jameson, in the *Brooklyn Medical Journal* for February, 1900, reports an enucleation of an eye which had received a severe traumatism when the patient was 12 years old. From the date of the injury until she presented herself for treatment she had experienced no distress from it. She had never told her relatives that she was blind in one eye. So far as the outward appearance of the globe was concerned the eye was apparently normal. The late trouble with the eye resembled in its incipiency iritis. There was slight pain radiating from the back of the eyeball, lacrimation, and general discomfort, with circumcorneal injection. The iris was immobile; the cornea was clear; the lens was opaque and dislocated to the left. A closer examination showed an irregular cicatrix on the upper part of the sclera. As inflammation progressed the sclera and conjunctiva became engorged, and twenty days after the beginning of the inflammation the eye was enucleated. An examination of the eye after it was removed showed that the retina had become detached, and none of its histological elements were recognizable.

The Surgery of the Superior Cervical Sympathetic Ganglion.—

George F. Suker, in the *New York Medical Journal* of February 24, 1900, claims that the operation for excision of this ganglion is useful for all forms of glaucoma, excepting the hemorrhagic variety. He thinks it will prove useful in epilepsy, Graves's disease, and other disorders in which it is desirable to rearrange the vasomotor conditions of the brain. The main purpose in his paper was probably to exploit a case in which this operation was performed for simple optic atrophy. In this case, which was originally reported in the *Ophthalmic Record* for October, 1899, both superior cervical sympathetic ganglia were removed. The patient had only faint form perception at two feet; now he can recognize the hand at six feet. His light perception is more acute and the field of vision larger. This favorable result was achieved after the former condition had persisted for nearly two years. Whether the improvement will be temporary or permanent cannot yet be stated.

Depilation by the Roentgen Ray.—

Neville Wood, in *The Lancet* of January 27, 1900, describes the case of a woman 22 years of age who consulted him for an overgrowth of hair upon the face. It was especially marked on the left portion of the upper lip and extended downward upon the cheeks. In addition there was a marked overgrowth of hair in front of the ears extending downward to the angle of the jaw. The hairs were dark in color and thick, and varied from one-eighth to one inch in length. The areas involved were exposed to the action of the *x*-ray, the primary coil being maintained at about five amperes, with from 250 to 300 interruptions per second. After fourteen exposures it was noted that the darker hairs had lost some of their luster, and a week later there was an obvious lessening in their number. The portions of the face not involved in the hairy growth were protected by lead plates. Forty-five treatments were required, which were followed by destruction of nearly all of the hair bulbs, as well as disappearance of the down from the face. A very few long dark hairs remained, which were removed by electrolysis.

THERAPEUTICS.

Self-redemption from the Cocaine Habit.—

The *New York Medical Journal* of February 3, 1900, publishes an account written by a West Indian apothecary regarding addiction to the cocaine habit which he overcame himself. He began by using the drug under the advice of a dentist for pain in a hollow tooth. A small quantity of cocaine was placed on a piece of dampened cotton and poked into the tooth. This gave relief from the pain and was repeated later. The tooth was filled, but the habit was continued. Like most users of cocaine, the original plan was followed. In this case he placed a moistened pledget of cotton upon which a few grains of cocaine had been sifted between the teeth and the cheek. In this way there was a slow absorption of the drug. He describes the effect of the drug as producing a feeling of well-being and cheerfulness, and under its influence he could perform heavy physical and mental work. Upon increasing the amount there at times developed toxic symptoms; he was morose, quarrelsome, developed persecutional ideas, and was restless, with a dread of impending evil. Later there was inability to eat, insomnia, and an insatiable craving for alcoholic stimulants. Before beginning the use of the cocaine he

was easily affected by alcohol, but under the effect of the drug enormous quantities could be taken without causing intoxication. For five years the habit continued, but at the end of this time he awoke to a realization of his deplorable condition and made a determined effort to discontinue the drug. This he succeeded in doing, notwithstanding that he was handling it daily in his business. He describes graphically the torture he underwent in suspending the use of the drug.

Methylene Blue in Malaria.—

J. W. P. Smithwick, in *Merck's Archives* for February, 1900, says that methylene blue is a perfect substitute for quinine in the treatment of malaria. It may be used in all forms of the disease with the same confidence with which quinine is administered. It is especially valuable in malaria complicated with hematuria, and is particularly so in those cases in which the malarial fever is associated with pregnancy, as it has no action upon the uterus. He gives a table reporting twenty-four cases of quotidian, fourteen of tertian, three of quartan, five of estivo-autumnal, three of hemorrhagic, and one of double quotidian malarial fever, all but four of which recovered. There was but one relapse, a case which ultimately recovered. Of those which died, one was given methylene blue one week without appreciable benefit; then quinine was given, also without improvement, though the blood showed the malarial parasite at every examination. One patient had chills every third day for three weeks and was not improved by the administration of the methylene blue. Two of the patients that died were in feeble condition; one had mitral disease, and the other was in a precarious condition at the time the malaria was contracted. The remedy seems to be of especial value in the hemorrhagic type, as it is both a parasiticide and a diuretic; it is usually administered in two-grain doses six times daily, in the form of capsules or pills. About an hour after its administration it colors the urine an intense blue. He is of the opinion that this substance is quite as efficient as quinine in the treatment of malarial fever, and is free from some of the unpleasant complications attending the administration of the latter drug.

The Treatment of Nephrolithiasis with Glycerin.—

M. Hermann, in the *Medical Chronicle* for January, 1900, has used glycerin in 115 cases of kidney stone. In fifteen cases concretions were passed, and improvement was noted in the patient's

condition; in twenty-nine cases concretions were passed without subjective improvement; in twenty-five cases there was improvement in the condition of the patient without the passage of concretions; in forty-six cases glycerin had no effect whatever. The theory upon which glycerin is given is that it is a solvent of uric acid and passes unchanged through the kidneys. The administration of glycerin is especially efficient in overcoming pain in the back and the painful sensations along the ureters. The anodyne effect of glycerin in this condition is very pronounced. The urine passed after the administration of glycerin was usually free from albumin, sugar, or blood, but it contained large amounts of mucus and pus in those cases which were complicated by pyelitis. Five hours after taking 120 grammes of glycerin, an analysis of the urine showed the presence of nine per cent of this substance. The glycerin may favor the passage of kidney stone by lubricating the passages, but it also has the power of dissolving many of them, particularly those composed of uric acid. The drug should be given in a single large dose, from one to four ounces between meals, and is repeated several different days. As a rule it causes no distressing symptoms, though a few patients have complained of headache, and in those suffering from digestive disturbances it has caused diarrhea. The glycerin is dissolved in an equal amount of water.

Septic Lymphangitis Along the Ureters Affecting the Kidneys Treated with Antistreptococcic Serum.—

J. W. Stenhouse, in *The Lancet* of February 3, 1900, describes the case of a woman 28 years of age who for seven years had suffered from a uterine discharge; later there was involvement of the urethra and bladder. After a long bicycle ride the patient was taken with a chill, a pulse of 116, and a temperature of 104°. The abdomen was distended and the muscles rigid on the right side. The kidney on the right side was easily palpated; it was enlarged and tender. The ureter marked a line of tenderness into the pelvis, and where it passed over the pelvic brim it could be felt as a thickened cord. The urine contained pus, and micturition was painful. The following day the temperature went down, but the tenderness over the right kidney persisted. From this on for several days the temperature oscillated between 99.8° and 102°. Then the left kidney was involved, could be palpated, and was tender. Enlarged glands were felt about the iliac arteries, and a grave prognosis was made. Urotropin, ten grains three times a day, did not improve matters, and as the patient was losing rapidly it was decided to try

antistreptococcic serum. Four injections were given with a marked modification of the temperature and pulse. There was an improvement in the subjective condition of the patient, the kidneys decreased in size, and the amount of pus diminished. From this on there was continued improvement, and the patient made an excellent recovery, although the urethral discharge remained.

Santonin in the Treatment of Epilepsy.—

G. Frank Lydston, in the *Therapeutic Gazette* of February 15, 1900, says that a substitute for bromides in the treatment of epilepsy is needed. He believes that this has been found in santonin, which he has used for nearly twenty years in the treatment of this affection. His attention was first directed to santonin as of possible value in the treatment of epilepsy by the fact that it is a valuable antispasmodic in children. He does not claim that it is a specific for epilepsy, nor is he sure that permanent cures have been produced. All that he claims for the remedy is that under it the average epileptic patient shows better results than under the bromides. Santonin acts well in cases in which the bromides for one reason or another are not tolerated. It has proved of especial value in those cases in which the bromides failed. It does not cause mental hebetude, nervous or circulatory disturbances, nor disfignring eruptions. In adults he begins with a dose of from two to five grains of the powdered drug, which is gradually increased to the point of tolerance. Many patients take twenty grains three times a day for some weeks. The point of saturation of the system is shown by a yellow color of the urine and a varying degree of renal and vesical irritation. He has never given more than twenty grains, but does not know what the limit of the dose of santonin is. He advises caution in giving the drug, to begin with small doses gradually increased.

The Treatment of Posterior Urethritis and Prostatic Abscess.—

Ramon Guiteras, in the *Therapeutic Gazette* of February 15, 1900, says that when the inflammation has involved the bulb urethral hand injection should be discontinued. In the acute stage urethral irrigations of permanganate of potash, and later silver nitrate instillations, may be employed. The treatment of prostatic abscess follows the same general lines as for posterior urethritis, especially during the state of pus formation. The patient should be kept quiet, urinary antiseptics administered, and the bowels kept freely open. The most important single remedy in the treatment of

this condition is hot rectal irrigation of saline solution given by the double-current rectal tube. These are employed at a temperature of 105° to 120° F. The patient assumes a recumbent attitude, resting on the sacrum with the feet elevated. This position is readily assumed in a bath-tub by placing the feet on the edges of the tub. A reservoir is hung level with the head or a little higher. In this position the inflow tube allows the warm fluid to strike directly against the anterior wall of the rectum. Half a gallon or more should be used each time. Perineal incisions into the prostate are dangerous—much more so than those made through the rectum. Prostatic massage is very useful after the abscess has burst or been evacuated. It is of especial value when the abscess opens into the urethra, and should be combined with irrigation of that canal.

The Colony System of Caring for the Insane.—

Herman Ostrander, in the *American Journal of Insanity* for January, 1900, says the tendency of modern methods is toward segregation of the insane. People are learning that home life is the most natural, the most comfortable, and the most economical for the insane as well as the sane. The colony, cottage, and boarding-out systems are but different methods of attaining the same end. Each has its special advantages and adaptations to localities and peculiar conditions. The colony system offers an economical and ready method of extending the old and constructing new asylums. Cottages furnish a home for all who can appreciate it, which is about 50 or 60 per cent of the entire asylum population. Its industrial features offer occupations that are healthful to the body and stimulating to the mind, and so remunerative as to materially reduce the expense of maintenance. It is adapted to disturbed as well as quiet cases. It offers a rational plan for the treatment of able-bodied epileptic insane. The accommodation of each cottage should be limited to twenty persons. Such colonies should be located at a distance not exceeding three miles from the parent institution, should not have to exceed twenty patients, and should not be constructed upon the dormitory system.

Treatment of Exophthalmic Goitre by the Constant Current.—

L. R. Regnier (*Le Progrès Médical*, Feb. 10, 1900) says that the success which has attended surgical intervention in this disease has directed the attention away from the medical treatment and has caused a neglect of the valuable results to be obtained from the use of electricity. Since 1895 he has been using the galvanic current,

employing a stable application. He finds that this treatment moderates the action of the heart, exerts an electrolytic action upon the gland, and improves the action of the sympathetic. It is a method of treatment which is devoid of danger. That the amelioration which follows this treatment is often succeeded by comparatively permanent results is shown by one case which was treated in 1896. The man was totally incapacitated, but since that time has resumed and continued his regular employment. The author reports five additional cases, all of which were improved and some of which were symptomatically cured. The electricity is applied by a fixed electrode, 200 centimeters in area, fastened to the back and attached to the negative pole. The positive electrode has an area of 80 centimeters and is attached to the tumor. The applications are made three times each week and have a strength of from one to ten milliamperes.

Kola in Seasickness.—

C. C. Vinton, in the *Medical Record* of February 24, 1900, claims to have tested kola personally upon a voyage from Yokohama to San Francisco. He says that he is an indifferent sailor, and the first five days of the trip were rough. By keeping a piece of the dried nut in his pocket and frequently biting off a morsel and chewing it slowly he found himself free in the main from the swimming headache and the sour stomach which commonly accompanies any exertion under these circumstances. If he waited until the stomach symptoms appeared no effect seemed to result from the use of the nut. When the remedy was taken while there was yet time for observation, as in the early morning, it seemed to act specifically in preventing the severe symptoms of seasickness. The good effects were noted in about twenty minutes or half an hour, and he attributes them to a mild stimulation of the nervous system and the general toning of relaxed tissues produced by the drug. He does not claim that kola cures seasickness, but it decidedly moderates this condition.

Benzoic Acid in Ammoniacal Urine.—

W. W. Ashhurst (*Philadelphia Medical Journal*, Feb. 24, 1900) has found that the diminution of sodium benzoate has a positive influence in preventing alkaline fermentation. Of a number of samples of urine exposed to the air of the laboratory for several days, none became alkaline. The effect of benzoic acid does not directly increase the normal acid of the urine, but the ammoniacal fermentation is prevented and the normal acidity asserts itself.

The beneficial effects obtained in many cases of cystitis, where there is no ammoniacal fermentation and no residual urine, would indicate that this substance has an antiseptic or germicidal action. This influence, however, is not exerted on all forms of bacteria. The diuretic action of the substance is inconstant.

Home Remedy for Leg Ulcers.—

G. B. Buehler, in the *Philadelphia Medical Journal* of February 17, 1900, says that a formula long successfully used by him is prepared as follows: A pint of boiled linseed oil is heated thoroughly, to which is added a half-pint of the red oxide of lead. The mixture is allowed to boil, and after cooling is again boiled. When cold a half-ounce of gum camphor is stirred in. The oxide of lead is decomposed into a black oxide, and the repeated boiling changes the consistency so that it can be made into a stick resembling diachylon plaster and can be spread on a cloth by heating over an alcohol flame. His best results have been obtained in indurated varicose leg ulcers. In syphilitic leg ulcers it has met with little success.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Spontaneous Reduction of an Inverted Uterus.—

A. F. Jonas (*Western Medical Review*, Feb. 15, 1900) reports the case of a woman aged 36 who was admitted to the hospital in October, 1893. Prior to admission she had had eight labors and two miscarriages. Her youngest child was three years old, since which time she had suffered from metrorrhagia. In one of these attacks she was admitted to the hospital, and a superficial examination revealed what was at first thought to be a polypus, but was later, upon more careful investigation, found to be an inverted uterus. On attempting to reduce the inverted fundus by catching the edges of the cervix with vulsella and making firm upward pressure, no result followed. An effort to dilate the constricting cervical ring was attended with some success, but prolonged efforts at reduction were useless. Hemorrhage was alarming, and to stop this the entire mucous membrane of the inverted portion was removed with a sharp Volkmann spoon. The forceps were then removed, the uterus raised to its natural place, and after a copious flushing of the vagina it was firmly packed with iodoform gauze. Gradual reduction was attempted by packing it below, but this procedure proving painful it was finally abandoned, and the patient allowed to return home with

the inversion in much the same condition, excepting for the curettement, that it was on admission. Much to the surprise of the reporter he learned that she had passed through a normal confinement after her return home. This implied a spontaneous reduction of the inverted organ and a complete regeneration of its mucous membrane.

Hysterectomy in Puerperal Infection.—

A. M. Cartledge, in *Obstetrics* for February, 1900, says that in 1895 he reported to the Southern Surgical and Gynecological Association two cases with specimens of hysterectomy for multiple abscess of the uterus occurring in puerperal sepsis. His first two were done with abdominal section, as he believed that the uterus was associated with tubal disease. This he found not to be the case, the enlarged and infected uterus being free in the pelvic cavity. These cases taught him that in many violent infections, if the patient survived long enough, the spreading was directly by the lymphatics, and that the tubes and ovaries might escape entirely. Since that time he has observed another and very interesting case in which infection followed an abortion. In this case he intended to thoroughly curette and pack the uterine cavity, trimming off a gangrenous portion of the cervix. This procedure showed that the uterus was in an advanced state of acute septic necrosis, and he immediately proceeded to the removal of the organ by the vaginal route. On incising the posterior cul-de-sac, turbid serum flowed from the incision. The uterus was easily removed, as there were no adhesions, and the cavity packed with gauze. Subcutaneous saline solutions were given, the temperature aud pulse soon reached normal, and the patient made an uninterrupted recovery.

The Surgical Treatment of Acute Puerperal Sepsis, with Special Reference to Hysterectomy.—

Hiram N. Vineberg, in the *American Journal of the Medical Sciences* for February, 1900, at the outset of his paper says the question of hysterectomy in puerperal fever is one of considerable difficulty at this time. Not a little of this is due to the vagueness of the term puerperal fever. It is understood that the adjective chronic, as applied to this condition, includes cases which are commonly protracted beyond the tenth day. Acute cases are those which ordinarily terminate fatally between the fifth and the tenth. The importance of this definition becomes manifest in discussing surgical intervention. Some argue that the first class of cases end fatally, no matter whether they are operated or not. It is main-

tained that a radical operation in the acute cases simply hastens the death of the patient. Those which pursue a chronic course usually get well. A truer definition of acute puerperal sepsis is, according to the author, an infection that takes place either shortly before, during, or immediately after labor, showing symptoms during the first week of the puerperium, and in which the symptoms persist indefinitely with varying severity until the disease ends in death, in a cure, or passes into a chronic state. In support of his argument that time alone should not determine the application of the word chronic to the case, the author collects a considerable number of cases from the literature in which death took place at varying periods from the eleventh to the fifty-fifth day, with an average of twenty-three days.

The points which the author has endeavored to make in his paper are that puerperal fever is a wound fever and wound infection calling for surgical measures, such as free drainage, irrigation, the removal of débris, etc. These means failing to accomplish the desired result, ablation of the affected organ or organs is indicated. In every case the site of the original infection is to be determined if possible. If this is situated in the uterus, curettage, drainage, and irrigation will relieve 95 per cent of the cases. In the remaining five per cent, roughly speaking, these measures will fail, and in these exploratory laparotomy is indicated. In most of these cases early hysterectomy will be required.

Anal Ovariotomy.—

Hubert Peters, in the *Wiener Klinische Wochenschrift* of February 1, 1900, describes the case of a woman 37 years of age who since early youth had suffered from obstinate constipation. For years there had been more or less prolapse of the rectal mucous membrane. The patient had three children, and normal labors Years before coming under observation she had a severe pelvic disorder complicated by pleurisy. Examination showed an anemic, thin woman, with a greatly relaxed rectum; a portion of the wall was prolapsed, but no hernia of the rectum was present. The uterus was of normal size, easily movable, and had two deep ulcerations of the cervix. In the region of the left ovary was a tumor the size of the fist. The patient was advised to have two operations, but she would not consent to this, insisting that all that should be done should be undertaken at one time. The operation for the rectal prolapse was made, a portion of the mucous membrane being cut away, opening Douglas's cul-de-sac widely. Through this opening

the cyst of the ovary was tapped, the emptied sac brought out through the rectum, and the pedicle ligated in three parts. There was a slight rise in temperature for the first few days, but after that recovery was normal. The wound in the rectum healed without suppuration.

An Operation for Deformed Rectum.—

I. G. Modlin, in *The Lancet* of January 27, 1900, describes the case of a woman 24 years old with a valve-like opening between the vagina and the rectum. There was no opening in the perineum. The condition had evidently existed from birth. It had given rise to no symptoms beyond an obstinate constipation and the unpleasantness due to the abnormality. Defecation was difficult and usually occupied half an hour, and caused severe pain; it was frequently followed by hemorrhage, and sometimes the patient fainted.

The operation was performed by making an incision in the middle line between the posterior angle of the vulva and the coccyx. This was extended upward over the fibrous tissue filling in the space between the rectum and the coccyx. The next step was a dissection through the rectovaginal septum, thus separating the rectal passage. The sides of the rectum were then separated from the surrounding tissue. The lower end of the rectum, which was now freely movable, was then brought backward through the opening and sutured to the skin at the posterior angle of the perineal incision. The anterior portion of the wound was sutured to form a new perineal body. The results were excellent; the constipation has improved and defecation is free from pain. There is entire control of the bowel, the lower muscular fibers acting as a perfect sphincter.

Determination of Sex at Will.—

In the *New York Medical Journal* of February 24, 1900, is an article by J. Griffith Davis upon this subject, which is commented upon editorially by the same journal. The tendency of these remarks is toward the belief that Dr. Davis has solved the problem which has heretofore proved so elusive. The formula is stated as follows: "In every monthly cycle of menstrual life there is a period of susceptibility to impregnation, divided into three terms, viz., from three days previous to menstruation to eight days after the cessation of the flow, in which only girls are produced; from ten to fifteen days after menstruation, in which only boys are produced; and the intervening ninth day, which may be called neutral ground, in

which the result is uncertain—twins of different sexes may be the outcome, or, if only one child is the issue, it may be either a boy or a girl, but if it is a boy it is apt to be defective in masculine characteristics, and if it is a girl it is proue to be of the hard angular type."

The *Journal* comments enthusiastically upon the application of Dr. Davis's theory, which it is hoped will deliver the world from masculine women and from the "male milksop, legally entitled to wear tronsers, but wholly incapable of bearing arms."

Day Terrors (Pavor Diurnus) in Children.—

George F. Still, in *The Lancet* of February 3, 1900, says that much has been written about night terrors, but those which occur during the day have received little attention. Similar, but much less common, attacks have scarcely received notice by English writers. Henoch in the fourth edition of his lectures alluded to them and gave a history of two cases. The author reports five cases, in four of which there was close relation with night terrors. The difference between night and day attacks is not merely one of time, but there is the essential difference that the night terror comes on during sleep, while the day terror occurs during the waking condition. Patients who fall asleep during the day and are aroused by one of these attacks are not to be classed among those having day terrors. Consequently the difference between night and day terrors is really as to whether the patient is asleep or awake, so that the proper names to apply to these would be, "sleep terrors" and "waking terrors." The children who suffer from day terrors are of a nervous, excitable temperament, and may show other functional neuroses, such as habit spasms and nocturnal enuresis. It is probable that both sleeping and waking terrors are identical in their nature.

Dilatation of the Colon.—

Alfred Hand, Jr., and F. W. Stewart reported a case to the Philadelphia Pediatric Society (*Pediatrics*, Feb. 1, 1900) that is of interest from the fact that it emphasizes the necessity of careful exploration of the colon in all cases of obstinate constipation. The patient was a boy six years old, in whom distention of the abdomen and constipation had been noted since the age of three months. On admission the girth of the abdomen, midway between the umbilicus and ensiform cartilage, was 71 centimeters. Massage, strychnine, and electricity relieved the distention, so that two weeks after the

girth had been reduced 12.5 centimeters. This patient was admitted to the Pennsylvania Hospital August 30, 1899, and seventeen days later died of exhaustion. At the post-mortem the colon was found to be enormously distended, measuring 17 centimeters in circumference. Ten centimeters above the ileocæcal valve was a constriction, and 30 centimeters above the anus. The colonic walls were thickened and covered with large ulcers. Rectal circumference was 10 centimeters.

Hodgkin's Disease in a Boy of Seven.—

J. M. Taylor, in *Pediatrics* of February 15, 1900, reports a case observed in the Polyclinic Hospital in Philadelphia which was at first classed as glandular fever. The history showed that the condition had existed for several months, and the temperature was a trifle below normal. The general health was fair. The glands of the neck and axilla ranged in size from that of a pigeon's to a pullet's egg. In the left epitrochlear region a large gland about three inches long was found, and in close proximity to it another of about half this size. In the corresponding region of the right arm there were three masses about the size of olives. Here and there about the lower surface of the abdomen were several glands of considerable size. The spleen was only moderately enlarged. The boy was pale and had been growing slowly weaker for three or four months. The gait was stiff and awkward, and turning the head was painful. The case was not accurately studied, as the boy was seen but once and could not be located a second time.

The Undulatory Current in Gynecology.—

George Apostoli (*American Therapist*) says that the undulatory current presents combined physiological effects of an interrupted and a continuous current. Since he began the use of the current in 1896 he has applied it 4232 times in 308 cases. The most pronounced effect of the current is an analgesic action which causes diminution and often disappearance of pain. It is especially valuable in dysmenorrhea. Congestive circulatory troubles are greatly improved. It is not as efficient as the continuous current in controlling hemorrhage. The current has no trophic action, and hence does not hinder the growth of fibromata, but it often improves the congestive and painful conditions due to their growth. While it has no power to correct prolapsus or displacements, it often renders valuable assistance in diminishing pain and increasing muscular contractility.

Laborde's Method of Resuscitation.—

F. E. Fronczak, in the *Philadelphia Medical Journal* of February 24, 1900, contrasts Schultze's and Laborde's methods of resuscitation, giving preference to the latter. He says that Schultze's method of swinging the child requires a certain technique which is seldom learned by midwives. He believes that Laborde's method is quite as efficient as Schultze's—that it will resuscitate a deeply asphyxiated child. Many, however, believe that traction of the tongue is useful in those slight forms of asphyxia in which slapping the child or sprinkling with water is sufficient to start the respiratory movements. Experience has shown that it is efficient in the most severe forms of asphyxia. Its advantages are that it involves much less fatigue for the operator and it is practicable in those cases in which there are fractures in which Schultze's method cannot be employed; it is simple and can be carried out while the child is in a warm bath, thus conserving the bodily temperature.

Cystadenoma of the Ovary with Diabetes, the Latter Recovering After Operation.—

Henry D. Buyea, in the *Philadelphia Medical Journal* for January, 1900, calls attention to the relation existing between tumors of the pelvis in women and the occasional development of diabetes. In a case which he describes, which was that of a cystadenoma of the right ovary, there was seven per cent of sugar associated with the clinical symptoms of diabetes. After the removal of the cyst the sugar disappeared from the urine and the diabetic symptoms recovered. The author discusses several theories which have been advanced to account for this condition, but finds that none of them are quite satisfactory. Pressure on the liver can hardly account for the diabetes.

FORENSIC MEDICINE.

The Imbecile Type of Criminal as Illustrated by Samuel Henderson.—

Martin W. Barr, in the *Alienist and Neurologist* for January, 1900, describes the trial and conviction, with his examination, of Samuel Henderson, aged 15 years, who murdered Percy Lockyer, aged five. The crime was apparently motiveless, and an effort was made by Henderson to turn suspicion from him; when taxed with the commission of the act, he made several contradictory statements. The early history of Henderson's family does not present any striking departure from the normal, but his father is decidedly below par

mentally, and he has a brother and a sister who are mentally defective. His mother is intelligent and remarkably well educated for one of her class, but extremely nervous, and has been a sufferer from neuralgia for years. The subject of the inquiry was born after a tedious and difficult labor, and was what is known as a "blue baby." At six months he had an attack of cholera infantum, followed by meningitis. In this illness he had spasms lasting for five hours, in which his body was rigid, eyes set; and, supposing him to be dead, preparations were begun for the funeral. He has had almost every disease common to childhood. At the ages of 10 and 13 he had attacks of typhoid fever, each leaving a marked deterioration, both mentally and physically. He suffers from frequent headaches and has the uncertain memory peculiar to imbeciles—phenomenally accurate in some respects, absolutely unreliable in others. He read the daily papers intelligently and delighted in dime novels—adventures of Indians and of Jesse James. He recognizes colors, tints, and shades, and counts to hundreds and appreciates values. He is unable to draw, but writes a fairly good hand; having little manual dexterity he cannot drive a nail. His table manners are fair. There are marked choreic movements of the face betraying an exceedingly nervous temperament. He is subject to paroxysms of laughter and weeping without cause or at the slightest provocation. He is both obstinate and passionate, occasionally destroying clothing when aroused; obedient when so disposed, and at times affectionate. He is simply the slave of a highly emotional nature without the controlling power of the moral sense, in which he is absolutely lacking. He is untruthful, vulgar, careless with fire, heedless of danger, fond of music, of animals, of boys' games, and of dolls. He is devoted to babies, whom he would nurse fondly, yet pinch at the same time. He liked to play with little children, whom he terrorized, but older boys teased and enraged him.

The physical examination showed a boy undersized, of slender build, and weighing about ninety pounds. There were no marked deformities of the teeth and palate, but there were postnasal adenoids and the faucial tonsils were enlarged. He stammered slightly, and his pronunciation was careless, invariably substituting "f" for "th." The left side of the face was asymmetrical.

In the examination, when questioned, he related in an indifferent manner the circumstances of the killing of his victim. In direct contrast to this is his fondness for dolls, his love of babies, and his care for children. His love of animals is also marked, and he nearly

wept as he described the death of a pet squirrel. The expert witnesses for the prosecution included a well known specialist in insanity, a neurologist, a surgeon of international reputation who had had some experience with the insane, and the physician of the jail. They claim no specific experience in idiocy or imbecility. They agreed in finding the boy untruthful, vulgar, and profane, with criminal tendencies. In their opinion he could not have been insane at the time of the commission of the crime, nor did he during the whole proceedings exhibit any signs of imbecility.

Barr comes to the conclusion that the boy is of an imbecile type, as it seems to him impossible to picture a happy, healthy, well-balanced boy of 15 who laughs and weeps many times a day and does it without cause; who finds in little children his best playfellows, and yet calmly recites the murder of one, while shrinking at the thought of the death of a squirrel; indifferent to the loss of home and friends; listening with a leer to a verdict that might bring to him life imprisonment, and yet would shed copious tears over the torn dress of a paper doll. Henderson is of a type of the imbecile class in whom striking contradictions are found; he is tender and cruel, ingenuous and crafty, phlegmatic and nervous, unfeeling yet affectionate; he is frank, artless, secretive, shy, deceitful, truthful in many ways, yet an accomplished liar.

Physical Examination of Plaintiff in Personal Injury Suits.—

The doctrine generally sustained by courts is that an examination of the person cannot be made in case one declines to submit to it. This is based on the theory of the law that the persou of the individual is sacred and cannot be violated. In the *Journal of the American Medical Association* of March 3, 1900, is found an abstract of an opinion given by the Supreme Court of Minnesota differing from the general opinion held as to the sacredness of the person under certain circumstances. In a civil suit for physical injuries, where the plaintiff tenders an issue as to his physical condition and appeals to the courts of justice for redress, it is within the power of the trial court, in the exercise of a sound discretion, in proper cases, on an application reasonably made, under proper safeguards designed to preserve the rights of both parties, to order such an inspection and to require the plaintiff to submit to it under the penalty of having his action dismissed in case he refuses to do so. With all due deference to those authorities, some of which are eminent, that are to the contrary, the court cannot avoid thinking that they base their conclusion upon a fallacious and somewhat sentimental line of argu-

ment as to the inviolability and sacredness of a man's own person, and his right to its possession and control free from all restraint and interference of others. This, rightly understood, is all true, but his right to the possession and control of his person is no more sacred than the cause of justice. When a person appeals to the State for justice, tendering an issue as to his own physical condition, he impliedly consents in advance to the doing justice to the other party, and to make any disclosure which is necessary to be made in order that justice may be done. No one claims that he can be compelled to submit to such an examination. But he must either submit or have his action dismissed. In very many cases the actual nature and extent of the injuries can only be ascertained by a physical examination of the person of the injured party. And while personal injury cases were formerly infrequent, of late they constitute one of the largest branches of legal industry, and are not infrequently attempted to be sustained by malingering on the part of the plaintiff, false testimony, or the very unreliable speculations of so-called "medical experts." To allow the plaintiff in such cases, if he sees fit to display his injuries to the jury, to call in as many friendly physicians as he pleases and have them examine his person and then produce them as expert witnesses on the trial, but at the same time deny to the defendant the right in any case to have a physical examination of the plaintiff's person and leave him wholly at the mercy of such witnesses as the plaintiff sees fit to call, the court insists, constitutes a denial of justice too gross, in its judgment, to be tolerated for one moment.

Value of Patients' Estates Not to be Considered in Estimating Medical Services.—

In these columns we have had occasion to refer to the persistency with which medical men held to the view that medical services were of more value to the rich man than they were to those in more moderate circumstances. Not long since we referred to an incident in which a physician brought suit to recover ten thousand dollars, a sum amounting to nearly one thousand dollars a visit, for attendance on a wealthy man who had attempted suicide by cutting his throat. It is manifest that if the patient had been worth one thousand dollars instead of a million no such charge would have been made, because of impossibility of the patient paying such a fee. Assuming that there is a certain justice in charging the rich more than those in moderate circumstances, we are at once confronted with the proposition in this case that the man had attempted suicide. This

at once negatives the argument that the rich man's life is more valuable than the poor man's, so far as this case is concerned.

A case bearing directly upon this point is stated by the *Western Clinical Recorder*, taken from the *St. Louis Medical and Surgical Journal*. The Supreme Court of Alabama held that the trial court erred in admitting testimony as to the value of the patient's estate over the objection of the defendant. For this it reversed a judgment recovered for medical service and remanded the case for trial. The court said that the inquiry was as to the value of the professional services rendered by the plaintiff, and that the amount or value of the patient's estate could throw no legitimate light upon the case or aid in its elucidation. According to the evidence in the trial court there was no recognized usage shown which governed professional charges with reference to the financial condition of the person for whom such services were rendered. The cure or amelioration of diseases is as important to a poor man as to a rich man, and, *prima facie* at least, the services rendered to one are as valuable as the same services rendered to the other.

One portion of the decision is worth quoting specifically, where the court says a usage may be "so long established and so universally acted upon as to have ripened into a custom of such character that it might be considered that these services were rendered and accepted in contemplation of it." The above would imply that such custom might be established and be proven in a case. The court does not say that if an attempt had been made to show this that it would have been sustained, but it does say that the absence of an attempt to show it was sufficient to exclude testimony as to the value of the patient's estate as not having a direct bearing upon the contractual relation.

A Severe X-ray Injury.—

Patrick Cassidy, in the *Medical Record* of February 3, 1900, describes the case of a physician who on March 18, 1899, for the purpose of taking a skiagraph, exposed his left hip-joint for forty-five minutes to a tube of medium vacuum at a distance of five inches. The current was from a static machine, the plates of which revolved two hundred and twelve times a minute. During the exposure there was no sense of injury, nor was there pain. One week later there was an itching in both groins, which was followed by an acute dermatitis. At the end of the second week the erythema covered the lower third of both sides of the abdomen and the upper third of both thighs. At this time the pain became intense and the patient

took to his bed. The inflammation went on to the formation of vesicles, and at the end of the third week the epidermis of the affected area came away. Ten days later the right side had healed, and also the left, with the exception of a space in the groin about the size of the hand. This was the seat of sharp lancinating pain. Three months after the exposure this surface developed a thin yellowish membrane which could be easily removed, but returned quickly. Later it could not be taken away. July 1 the pain had become so intense that rest or sleep could only be procured by large doses of morphine. An attempt to resume practice at this time was followed by so much pain that he had again to take to his bed. During this time he consulted many physicians who had had experience in *x*-ray injuries. The consensus of opinion was, "Use mild remedies; nature will effect a cure." Following this advice he used nearly every sedative ointment in the Pharmacopœia, and applied many lotions and plasters.

An operation was undertaken September 14, 1899. An exploratory incision two inches in length through the diseased tissues showed that it was as difficult to cut as sole leather, and it was about one and one-half inches in thickness. This altered tissue was firmly attached to the muscles of the thigh. The skin was dissected around the circumference, and it was removed from its deep muscular attachments. The femoral artery was found to be embedded in the induration, and was dissected out from the diseased mass. The time of the operation was one and one-half hours and the shock was slight. The extensive ulcer was finally healed by skin-grafting. From the day of the operation the pain ceased, and on the 10th of October the patient was able to be out.

Who is Responsible for the Sponges in a Surgical Operation?—

An issue of this kind is soon to be tried in Columbus, Ohio, a surgeon of that city having unfortunately left a sponge in the abdominal cavity of a patient, in consequence of which the patient died. It is the contention of the operator that the nurse was at fault, and in the *Cleveland Medical Gazette* for January, 1900, several affidavits are given, including that of the family physician and the assistant, all of whom testify that in this particular case, after the two incisions had been made, and before they were closed, the surgeon asked the nurse if all the sponges had been accounted for. The operator in this case contends that the accident in question was due to negligence of the trained nurse, an opinion in which he is sustained by nurses and assistants in training schools. It is said

that the trained nurse takes upon herself certain duties in which she has had special instruction, and which entitle her to higher compensation than an untrained nurse. It is generally understood that one of these duties in certain conditions is to account for sponges. In modern hospital practice the physician or surgeon can no more be expected to do the nurse's work than he can that of the pharmacist, or that of an anesthetist during an operation. If the operator uses due care in selecting his assistants, including nurses, from among those legally qualified to practice their respective professions, they must each be responsible for the duties belonging to their own profession. In this case the operator used the ordinary care and skill which the law requires when he called upon the nurse to see if she had all the sponges before he closed the cavity. If this position is denied, and it is affirmed that the nurse is an employee of the surgeon, and hence he is responsible for her acts, then the charge cannot lie in this particular case, because the nurse was an employee of the hospital. The patient, or her friends, engaged the room at the hospital, arranging for the nurse's services at the same time. If the responsibility for the nurse's services extends beyond herself, it must rest upon the hospital employing her.

Sunday Shaving.—

A case which is of little interest to the profession of this day is stated editorially by *The Lancet* of February 10, 1900. It acquires a certain interest from a historical standpoint, as it relates to that middle-age institution, the barber-surgeon. A hair-dresser of Wolverhampton was recently fined half a crown and costs for exercising his calling on the Lord's day. The statute under which the conviction was made provides that no tradesman, artificer, workman, or laborer shall perform any worldly labor upon the Lord's day, works of necessity and charity excepted. It was not asserted that the business which the hair-dresser had undertaken on that day belonged to the latter class, but that the act in question did not apply to barbers because they were not, *e jusdem generis*, tradesmen, or laborers. At the time the act was passed the barber included in his employment the work of the surgeon, and had the legislature desired to forbid this business on Sunday it would have expressly mentioned barbery among the prohibited occupations. The court decided the appellant, within the meaning of the act, was not a tradesman, nor a workman, nor a laborer, and hence was not liable under the act.

From this decision of the court *The Lancet* dissents, quoting

that the Archbishop of Canterbury enjoined the barbers of London to close their shops on Sunday, while the barbers themselves, in the middle ages, forbade the shaving of customers on Sunday. The general contention is that the laws of Henry VIII. as well as those of Charles II. did not exempt barbers from the observance of Sunday laws because of their surgical work.

Suspenders Impacted in the Esophagus.—

M. H. Richardson, in the *Boston Medical and Surgical Journal* of February 15, 1900, describes the case of a patient who had been an inmate of the Worcester Insane Asylum for eighteen months. Prior to his admission he had swallowed certain portions of his suspenders and some broken glass. The patient, who was somewhat dazed and silly, could not tell just how much he had taken. There was no pain, but discomfort behind the sternum while eating. The food at times passed easily into the stomach, and again it was regurgitated. The physical condition of the patient was excellent. With a sound an obstruction was felt in the esophagus at the level of the arch of the aorta. An *x*-ray showed a suspender buckle at this point. The case presented considerable difficulty, as it was too low for operation by the mouth and too high to be reached by gastrotomy. The esophagus was opened externally and explored downward with the fingers. This revealed a soft mass, which was reached by long-bladed forceps, and there was removed a ball and string attached to a brass ring, half a suspender web with two buckles, and a third buckle. There followed a wound infection with a temperature of 104°. This soon subsided under irrigation, and two weeks after the operation the patient was discharged recovered, but with no improvement in his mental condition.

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ORIGINAL ARTICLES.

A PLEA FOR MORE ATTENTION TO THE SENSE ORGANS, ESPECIALLY THE EYE.

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In whatever sphere of labor a person may be engaged, whether commercial or professional, employer or employed, the chances of success depend largely upon a proper physical development of every one of his sense organs. Business acumen or shrewdness, an ability to lead, a determination to succeed that defies failure, and especially confidence in one's own abilities—these and many other traits of character so necessary to success are all unfavorably influenced by any anomaly or irregularity in these delicate organs. How necessary, therefore, that the public in general, and the medical profession in particular, should be thoroughly impressed with the importance of perfectly developed and properly functionating sense organs. Imagine, if you can, what music would have been with a Mendelssohn or a Wagner deaf—what art would have been with a Rembrant or a Van Dyke blind—what the history of this country would have been with a Webster dumb and speechless. The loss or improper development of any of our sense organs must be as far-reaching in its effects as the influence of the individual would have been with same organs normal both in development and function. It affects not only the individual but the community.

The human eye, like any other organ in our body, is so constructed that it will immediately respond in its own peculiar way to certain selected impressions or stimuli transmitted to it. The stomach is impressed most easily by food, the heart by irregu-

larities in the blood or nervous systems, the skin by differences in temperature or pressure, and the eye by the quality, quantity, and intensity of that form of energy called light.

Rays of light impinging upon the anterior part of the eye, the cornea, are transmitted backward through a very complicated and yet most perfect optical apparatus, until they come to a focus upon the retina. In one respect the eye may be compared to an automatic camera, which is always in focus, no matter at what distance the object noted may be placed. The ability of the eye to thus accommodate itself is by no means automatic, however, but is a purely physiological act that requires for its accomplishment a certain amount of nerve and muscle energy. Here again the eye is similar to other organs in our bodies, in that the total amount of energy at its disposal is limited and can be exhausted with greater or less rapidity according to the particular circumstances and conditions of the person no less than the quality and the quantity of the work performed by it. So long as the amount of energy at its command is sufficient for the demands made in the effort of vision, so long will the eye feel easy and comfortable; but no sooner is this supply exhausted or considerably diminished than this fact is made manifest by no uncertain signs.

Anything that seriously diminishes the sum total of the energy of the body, whether it be disease or overwork or a failure to supply it sufficiently fast for the ordinary needs of the system, prevents the eye from being reenergized when its store is exhausted. Consequently the habit of reading and studying to any considerable amount when the body is in an exhausted condition, whether from disease or work, must be condemned.

Should a person be indifferent to this well established physiological fact, we may expect such indiscretion to be followed by a train of symptoms that are quite characteristic. One of the first results will be a paralysis of the vasomotor nerves in the ciliary muscles and their immediate vicinity, causing a congestion of that part of the eye. This is accompanied by pain of a dull, deep-seated character. If efforts of vision are discontinued at this time and the eye allowed to rest, the tonicity of the blood-vessels is soon reestablished, the congestion disappears, and any superfluous elements deposited and left in the tissues are speedily taken up and carried away by the lymphatics to be returned to the general circulation.

Again, the increase of blood in the ciliary body resulting from this congestion increases the secretions from this organ, so that the

tension of the eye is considerably, and in some cases dangerously, affected by it. This is especially true in eyes in which there is a tendency to glaucoma, and partly explains why this dreaded disease appears so often in eyes that have suffered much from strain of the accommodation, as in hyperopia or far-sighted eyes.

While the above conditions may be met with in the emmetropic eye, they are especially liable to occur in such eyes where, for certain reasons, the ability to properly focus the organ for different distances is below normal. Here the nerves and muscles concerned in the act of accommodation are constantly required to overcome the serious obstacles of an improperly developed eye in addition to the ordinary requirements of vision. Handicapped in this way, we have, besides the dull, deep-seated, aching pain and the inability to read for more than a few minutes at a time, a turgescence and gradual dilatation of the anterior ciliary vessels, and a hyperemic condition of the parts to which they are distributed. The temporary congestion of the ciliary region caused by vasomotor disturbances, as already described, becomes more or less permanent and more extensive as the process continues, so that ultimately it affects not only the ciliary body but the sclera, choroid, iris, cornea, conjunctiva, and lids, and makes all of these structures more liable to disease and infection. The blood-supply of all these parts being identical, any considerable circulatory disturbance of one part may ultimately affect all. Consequently, we may expect and frequently do have hyperemia and congestion of all the above named structures, forming a fertile soil for the lodgment and subsequent development of any of the many pathogenic germs which are uniiversally present. The powers of resistance being greatly diminished, everything is in readiness awaiting a favorable opportunity for these germs to inflict such damage as they may be able. A slight abrasion of the lids will produce sties; if the lesion is in the conjunctiva it may result in a catarrhal or purulent ophthalmia; if the cornea is injured, we may have an ulcer; under other conditions we may meet with iritis, choroiditis, episcleritis, etc.

In the treatment of these pathological conditions due regard should be had for the primary cause. In the application of remedies the most important thing is to relieve the eye of all undue and improper strain by the adjustment of such lenses as may be indicated. Any treatment that ignores this must be less successful than when due attention is paid to it.

There is still another way in which the evil consequences of an improperly developed visual organ may manifest itself, viz., in

strabismus, or a lack of balance of the muscles concerned in the movements of the eyeball. To understand the reason of this, allow me to recall to your minds points in the anatomy of the orbit. The ciliary muscles, or muscles of accommodation, receive their innervation from the ciliary nerves, which have their origin in the ciliary ganglion situated toward the temporal side of the optic nerve. This ganglion receives one root from the sympathetic by way of the superior cervical sympathetic ganglion, its motor root from the third, the motor oculi, and its sensory root from the fifth by way of its nasal branch. The motor fibers in the ciliary nerves have their primary origin in the third nerve, and this nerve also supplies the internal rectus muscle. Thus both the muscles of accommodation and the muscle that rotates the eye inward receive their innervation from one and the same source, and consequently any strong impulses sent along one of these will also, to a greater or less extent, affect the other, so that the acts of accommodation and of convergence go hand in hand. This fact being admitted, we must conclude that whenever any considerable effort at accommodation is necessary to overcome the effects of an improperly developed eye, the internal rectus receives a greater amount of innervation than is necessary for directing the eye to the object in view. This innervation results in contraction of the muscle and consequently convergence. If this be continued sufficiently long and often it will in time result in greatly increasing the size and power of this muscle, so that the difference in strength between the external and internal recti becomes so great that the eye habitually turns in.

Again, perfect binocular vision is only possible when both eyes act coordinately and the visual axis of each eye is properly directed in all directions. Since binocular vision is out of the question in these cases, we have to contend with all the inconveniences of binocular diplopia. The confusion incident to this condition is so great that it becomes necessary to eliminate one of the factors in its production, and consequently the brain gradually learns to ignore the impressions sent to it from the converging eye and recognizes only those sent from its fellow. The result is not only a loss of the powers of perception in the visual centers of the brain for that eye, but in time a loss of sensitiveness of the retina and an amblyopic condition ordinarily known as amblyopia exanopsia—*i.e.*, amblyopia from non-use. If this condition has existed for a relatively short time, it is possible by carefully directed treatment and exercises of the eye to overcome this loss of sensitiveness, both ocular and cerebral, and again reestablish the normal functions of

the organ. In cases of long standing, especially after the age of 12 years, the prognosis is unfavorable in the majority of cases.

Thus we have taken note of a few of the consequences that follow inattention to certain conditions which may appear insignificant and unimportant to some, but which may be followed by unpleasant, annoying, and even dangerous results. In view of the fact that the treatment of these cases is so simple and successful, there seems to be no excuse why such conditions are allowed to exist, except ignorance on the part of the people or lack of interest on the part of the family physician. Any excessive strain on the part of the ciliary muscle can only be relieved by the adjustment of such lenses as each individual case calls for.

Where ought such lenses to be obtained? In spite of the fact that every physician ought to and does know that the oculist, by virtue of his superior training and knowledge of things medical, is a thousand times more competent to treat these cases than the optician, yet we often meet cases that have been referred to the latter, to the great disappointment and injury of the patient. After a careful inquiry into the attainments of the opticians generally, I make the statement unhesitatingly that for a physician to refer a patient to an optician for glasses and, as I have known, for "inflammation of the eyes," is little less than criminal. Not one in a hundred has any practical knowledge of the fundamental principles of physiological optics, or of the anatomy, physiology, or pathology of the organ of vision, and for any one to send his patients to such a person is as ridiculous and absurd as it is to call on a professional bonesetter for counsel in a case of fracture, or to ask advice and counsel from an ordinary midwife in cases of difficult and unnatural labor or puerperal sepsis. The optician can do no more than simply make an *attempt* to correct any irregularities in the *focus* of an eye. Being unacquainted with the physiological process concerned in vision, he ignores some of the most important factors. To correct irregularities in sight includes much more than simply correcting irregularities in the *focus* of the organ.

The fact that an eye needs lenses to assist in vision is not necessarily because this organ happens to be out of focus, but the sense of need of glasses may be due to an anomaly or pathological condition, either inherited or acquired, that can only be diagnosed and properly treated by an oculist. In order to impress this fact upon the minds of the profession, a resolution was presented at the last meeting of the American Medical Association requesting physicians everywhere to use their entire influence to prevent the public from

ignorantly exposing itself to the dangers of treatment by the pretending optician and encourage it to seek advice from the oculist.

The only reason I have ever heard why such cases were sent to the optician was because of the inability of the patient to pay the ordinary fees for examination by an oculist. This is no reason at all. It is a well known fact that the optician gets fully as much and often more money out of these cases than the oculist does. Besides, there is not an honorable oculist anywhere who will not gladly offer his services free of charge, if necessary, to such patients as cannot afford to pay anything; while the optician, who is in the business only for revenue, can have no regard for the patient's unfortunate circumstances, for if he had he would not be in the business of manufacturing crippled eyes.

100 STATE STREET.

THE SIGNIFICANCE OF ALBUMINURIA.

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The researches of Bright proved the importance of albuminuria as a diagnostic sign, which at once led to extended and systematic researches as to its significance. Bright advanced the view that albuminuria was pathognomonic of organic renal lesions, while Spittal and a few others contended that albumin was found in the urine in cases where there were no organic lesions of the kidneys.

Bright's views met with but slight opposition, and the word "albuminuria" continued to be considered a synonym of Bright's disease until about the year 1840, when, largely through the efforts of Rayer, the accuracy of the views of Spittal was conclusively demonstrated, and as a contemporaneous writer put it, "To-day for everybody the word 'albuminuria' represents a symptom common to a variety of affections." In the half-century which has passed since the day of Rayer the number of affections in which albumin has been found in the urine has largely increased.

Proteids are not normal constituents of the urine, but three varieties—serin or serum-albumin, globulin-albumin, and peptone—are known to occur in this fluid, and the occurrence of other proteids is almost proven. Serin is analogous to serin of the blood, and is a constituent of the lymph, chyle, and many serous exudations. It resembles egg albumen, but differs from it in its behavior toward ether and nitric acid. Globulin is the albumin which is the chief constituent of the corpuscles of the blood. It is more diffusible than serin. Peptone is the proteid into which all forms of albuminous matter in the food are converted by the gastric juice. It is the proteids of the food in a form of hydration. It is the most diffusible of the albumins, being twelve times more diffusible than serin. Peptone does not respond to the heat or the nitric acid test, nor to any of the other ordinary tests for albumin in the urine, and this has led to its being called "latent albuminuria"—a name which is not only inappropriate but misleading. Although peptone occurs frequently in the urine, little attention has been given to its study, and its significance is unknown, yet there is abundant proof that its presence will be found some day to be of great diagnostic value.

Serin and globulin compose the precipitates obtained with the usual tests for albumin. The former, according to Jaccoud, is the

most pathological of the albumins, and, according to Jeanton, globulin is far less frequently found than serin in albuminous urines. But Dr. Noel Patton, after extensive researches on this subject, concludes that in all cases of albuminuria both serin and globulin are present in the urine, and that the relative proportion of these proteids varies considerably; that globulin, the highest during the night, falls greatly after breakfast, when it usually reaches its lowest point, and rises again towards evening.

There appears to be some relationship between the variation in the proportion of serin and globulin in the urine, and a similar variation of these proteids in the blood plasma, but there is reason to believe that this is not always true. High blood-pressure seems to favor the transudation of serin, while a low blood-pressure seems to favor the globulin.

At one time much stress was laid upon the physical properties of the albumin in the urine. Bouchard, in 1880, asserted that retractile albumin—*i.e.*, albumin which when subjected to heat coagulates and retracts into lumps or flocculi, leaving the urine perfectly clear —is the albumin met with in nephritis; while non-retractile albumin is capable of dialysis notwithstanding the integrity of the renal filter, and does not denote an organic lesion of the kidneys. Bouchard's theory, however, has been shown to be false, as it has been proved that this retractility depends upon the chemical composition of the medium in which the coagulation was obtained. Although admitting that retractility depends upom the chemical condition of the medium, Jaccoud and Jeanton still claim that every marked case of nephritis is accompanied by retractile albumin, and that, with great probability of being right, the existence of a renal lesion can be admitted whenever, by whatever method, a rapid and abundant retractile precipitate is obtained. Jaccoud also states: "I can affirm that the following characteristics only belong to an old nephritis; large flocculi form at once, and they are of a dirty-green color."

Most of the diseases, if not all, with which albumiuuria may be associated may be classed under the following heads:

1. Albuminuria with coarse organic lesions of the kidneys, which includes chronic parenchymatous nephritis, chronic interstitial nephritis, and acute diffuse nephritis.

2. Functional albuminuria, or albuminuria with no evident renal lesions.

3. Extra-renal albuminuria, or albumiuuria derived from the genito-urinary tract.

From what has already been stated it can be seen the significance of albumin in the urine is not patent now, either from its chemical or its physical properties.

The presence of albumin in the urine simply serves to point to the existence of one of the three widely varying conditions and does not serve to differentiate between them. How, then, are they to be distinguished? In order to answer this question it is necessary to consider the etiology and symptoms of these affections.

Acute Diffuse Nephritis may be caused by exposure to cold; to toxic agents, such as turpentine, carbolic acid, chlorate of potash, and cantharides; to the poisons of specific fevers, such as scarlet fever, measles, typhoid fever, diphtheria; to pregnancy; or to extensive lesions of the skin, as in burns. In this form of nephritis changes always exist in the epithelial, vascular, and intertubular tissues of the kidneys. It begins abruptly, except after fevers, when its onset is less sudden; but its existence may be suspected by a marked paleness of the patient, and a puffiness of the face or swelling of the ankles, lumbar pain, nausea, and vomiting may also be present. Fever may be present, but often in adults there is no rise in the temperature.

The changes in the urine are the most characteristic symptoms. There may be at first suppression, but more commonly the urine is scanty, highly colored, of high specific gravity, and contains blood, albumin, and tube casts. The albumin is abundant, forming a curdy, thick precipitate. On standing a thick deposit forms in the urine, which contains blood-corpuscles, epithelium from the urinary passages, and hyaline, blood, and epithelial casts. The pulse is usually hard and tense, and the second aortic sound accentuated.

The history of the case, the scanty, highly colored, heavy urine, the blood and epithelial casts, "particularly those made up of leucocytes," are the most important points in the majority of cases in determining the significance of albumin in this disease.

Chronic Parenchymatous Nephritis is frequently a sequel to acute nephritis. It, also, may come on insidiously from taking cold, as a result of repeated pregnancies, or in the course of phthisis. It is a disease of the young, rarely appearing after the age of forty years. The most important symptom in this disease is the presence of albumin. It is persistent and abundant, and remains so until the last stage of the disease is reached — that of renal atrophy — when the quantity of albumin is diminished and may even disappear.

The urine in parenchymatous nephritis is usually yellow, or highly colored, more or less cloudy in the early stages, later becom-

ing paler and turbid. The specific gravity is usually high in the early stages, though in the later stages it is lower, and the quantity is nearly always diminished in the early stages. The urine on standing usually deposits a heavy sediment containing urates and phosphates, leucocytes, sometimes blood-corpuscles, but not so numerous as in the acute disease, and numerous tube casts, especially hyaline, but also epithelial, granular, and fatty casts. According to Bartels "the majority of the casts are pale, hyaline, or slightly streaked, and often carry débris of epithelial cells." The more chronic the case, the more frequent the granular casts, the larger they become, and the more frequent the waxy casts. Anasarca is generally a prominent symptom, and serous effusions are not uncommon. The general surface, but more especially the face, presents a characteristic dull-white, puffy, and pasty aspect, being often also smooth and glossy, these appearances becoming more marked as fatty degeneration proceeds; puffiness of the eyelids often attracts attention to the existence of this form of the disease.

Chronic Interstitial Nephritis.—In this variety the onset is always very chronic and insidious, being independent of any obvious or immediate exciting cause. It seems that in some cases there are hereditary influences. It is chiefly associated with gout, chronic lead poisoning, chronic alcoholism, chronic dyspepsia, repeated exposure to cold, syphilis, and lithemia. Some authors believe excessive use of meat may become a causative factor.

In regard to the presence of albumin in this disease, Rendu states: "Even as the urine of parenchymatous nephritis, so does that of interstitial contain albumin almost always, but while in the first affection albuminuria is the chief phenomenon, and excels all the other phenomena in importance, in the latter albumin is a secondary and contingent phenomenon." Jeanton states: "The amount of albumin is ordinarily small in quantity; it occurs as a slight opalescent cloud, rarely flocculent, appearing slowly, and at the end of a few seconds. . . . It is not in the first stage of the disease that albuminuria is established permanently; it develops by starts. From time to time the urine becomes albuminous for a greater or less time; then the albumin disappears to reappear again, and this during months, often indeed during years; it is only at the end of a number of years of this irregular progress that it becomes permanently established."

The urine from the start is increased in quantity, and polyuria continues until the heart begins to fail in the later stages of the disease, when the quantity of urine diminishes. The color of the

urine is usually pale, transparent, opalescent, and the specific gravity is low. There is, as a rule, little sediment. Casts are not abundant in this variety of the disease, and are mostly hyaline, exceptionally granular. .

Forcible cardiac action with high arterial tension is usually present. Dyspepsia and loss of appetite are common. Disorders of vision are among the earliest symptoms. Edema is not common; slight puffiness about the ankles may be present, but dropsy, as a rule, does not appear.

Functional Albuminuria.—The question as to whether albumin can pass through or be excreted by the kidneys without the existence of coarse organic lesions has not been positively determined. Some investigators assert that albumin is excreted by the kidneys only when there is a break in the continuity of the structure of this organ; that this break or lesion is sometimes capable of repair and results in no permanent damage to the kidneys. Other investigators, on the other hand, claim that a perversion of the functional activity of the kidney may give rise to a temporary albuminuria.

Dr. Ralfe has offered a most valuable explanation of how albuminuria can result from functional derangements of the kidneys, by the suggestion that the various forms of functional albuminuria are mostly due to derangements of the metabolic activity of the renal cells—that function by which they separate albuminous constituents from the blood, and either appropriate and convert them for their own nutrition, or decompose them into urea and other products. When this function is inadequately performed, either from excess of work thrown on healthy epithelium or from any cause tending to impair their functional activity, albuminuria may result.

The name functional albuminuria seems more appropriate for this form of albuminuria, in which there are no, or at least no evident, organic renal lesions, than intermittent, cyclical, physiological, and other names proposed, because it is broader and serves to bring out the distinction between this form and those in which there are distinct organic renal lesions.

The conditions recorded as giving rise to functional albuminuria are numerous. Among the most important may be mentioned those recorded by Dr. Goodhart in 1890, and by Dr. Hingston Fox in 1892. Goodhart gives as the most important forms:

1. The lithemic, which may occur at all ages, the result, especially in children, of too heavy feeding on solids without sufficient liquid being taken with the food.

2. The hemoglobinuric, in which, instead of the blood-colored

urine of hemoglobinuria, albumin is passed. This form is sometimes caused by a cold bath, and it is the paroxysmal albuminuria of other writers.

3. Neurotic. Goodhart considers the theory of causation to be the exhaustion of the higher brain centers from work and worry; the lower centers being relieved, so to speak, of the inhibitory influence of the higher centers, fall into a turbulent condition, and hence cause an intermittent discharge of albumin — a condition perhaps analogous to the flushing of neurotic women. Fox mentions as a causative factor of this form of albuminuria, unstable circulation. In these cases, he thinks, there is a loosely built circulatory apparatus, with variations of the blood tension, the pulse is often compressible, and the urine deficient in acidity. This is the form sometimes described as albuminuria of adolescents, cyclic albuminuria, and hepatic albuminuria. He also mentions mental strain, shock of cold, and a variety resulting from the ingestion of certain articles of food, drugs, or poisons. He mentions tea-tasting as one of the causes.

The urine in functional albuminuria does not have the characteristics generally found where there are organic lesions of the kidneys. The albumin is found usually only in traces—in some cases it may be found in larger amounts—is intermittent, and does not persist for a great length of time. Tube casts are absent, but cylindroids may be present.

In the last form—*Extra-renal Albuminuria*—albumin is found in the urine only in traces, and is derived from the genito-urinary passages. It accompanies leucorrhea, gleet, or other venereal discharges, and cystitis. It may be due also to the natural seminal fluid, or prostatic secretion. When due to these causes the albuminuria is usually present only in the early morning urine.

Another cause is oxaluria, which may give rise to albuminuria by the sharp edges of the crystals of calcium oxalate scratching the mucous membrane of the urinary passages. This form of albuminuria is to be recognized by the existence of the symptoms of the diseases with which it is associated, and the absence of the symptoms usually accompanying the other forms of albuminuria.

THE DIAGNOSIS OF THE DIFFERENT FORMS OF MALARIAL FEVER.

BY ALBERT WOLDERT, M.D., PHILADELPHIA, PA.

At the present time the term "blood examination," as it applies to the examination of the blood for the malarial parasite, has become so common that one almost takes it for granted that the blood is examined in nearly all cases of fever of doubtful origin. The different methods of examining the blood for the sporozoa of malarial fever may be said to be old, yet the number of cases in which the malarial parasites are reported as being associated with typhoid fever impresses me with the fact that some of those methods are not sufficiently understood to prevent mistakes from occurring.

The resurrection of the term "typhomalarial fever" is calculated to do infinite harm, especially in those regions where it is not common to rely upon the microscope to determine the diagnosis of malarial fever. The harm comes from the useless administration of quinine in these doubtful cases of fever.

A former residence of several years in a State where malarial fever was most common convinced me that an examination of the blood was too frequently neglected. It is often neglected everywhere. In some instances the methods advised are impracticable. In a region where there is no *coal gas* it is useless to advise one to "heat the specimen in the oven or dry heat sterilizer at a temperature of 115° or 120° C." Fixation of the blood by means of ether and alcohol may or may not yield good results. If the specimen be fixed in equal parts of absolute alcohol and ether and washed in running water, very often the entire blood specimen is washed off or destroyed. If this method of fixation be employed the specimen must first be dried thoroughly in the air (longer than ten minutes), rinsed off with a great deal of care, and not under a spigot or hydrant, in which the pressure of water is often very great. One good method should be learned thoroughly, and the finer points in staining learned subsequently. The writer consumed many months trying to overcome all the inconveniences in the preparation of the stained specimen of malarial parasite, and this article is intended especially for those who are undertaking this work where laboratory facilities are not at hand. It is therefore made as plain as possible with all the necessary details of the technique.

The plasmodia, hematozoa, or sporozoa of malarial fever are best

studied in a *fresh* specimen of blood. A one-twelfth oil immersion lens and mechanical stage are preferable. In examining the fresh specimen the microscope should be taken to the *bedside* of the patient and the blood maintained at the body temperature; carrying the specimen from one room to the other frequently destroys it. A warm stage may be easily made of a long strip of copper plate adjusted to the stage of the microscope and tapering towards one end. This is laid on a piece of flannel or felt, and a small alcohol lamp placed at its tip. In the summer months the slide should rest on a piece of flannel or felt laid on the stage of the microscope.

Distinct pictures of the actively ameboid bodies cannot be portrayed so as to apply to them in all stages of their life cycle on account of the myriads of shapes which they constantly assume. The chart herewith presented may therefore be open to the criticism that it is schematic, yet I know of no easier way of presenting this subject so that it may be more quickly comprehended.

In the earlier stages of its intracorpuscular existence the organism is very minute in size (approximately one-twentieth or one-tenth the diameter of the red blood-corpuscle), but as the paroxysm draws near it becomes much larger and may occupy almost the entire contents of the red cell. The tertian parasite is the best for studying the general characteristics of the malarial hematozoa, the blood being taken an hour or two before the expected chill. Indirect sunlight is preferable for this work.

APPARATUS AND TECHNIQUE.

1. A one-twelfth oil immersion lens (Zeiss, Leitz, or Reichert) and warm stage.

2. Large (⅞-inch) clear cover-glasses and slides.

3. Cleanse cover-glass and slide several times with alcohol and polish thoroughly with a piece of dry linen or tissue-paper, being careful not to touch the surface of either cover-glass or slide with the fingers, as the oily secretion from the skin prevents the blood from spreading out smoothly. The cover-slip should be handled with forceps.

4. With a linen towel cleanse the lobe of the ear or end of the finger, first with alcohol, then with water (alcohol crenates the corpuscles).

5. See that the warm stage is properly adjusted so that the specimen may be preserved at a temperature of about 98.2° F.

6. In the winter months slightly warm the slide and cover-slip (too great heat or cold will crenate the corpuscles).

7. With a needle or tenotome make a quick thrust into the lobe of ear or end of finger, and with the linen cloth brush away the first drop or two of blood that makes its appearance. In some instances it is best to squeeze out *several drops* of blood before collecting the specimen desired.

8. Hold the cover-slip in the blades of the forceps, and touch to the summit of the drop of blood (without touching the skin). Very quickly apply one edge of the cover-glass to the slide, and allow it to fall by its own weight, when the blood should spread out smoothly, and the corpuscles separately. If one is quick in the manipulation it aids in the process to gently push the cover-slip a fraction along the slide the instant the former is placed on the slide. Never press downward upon the cover-slip to assist the blood in spreading. If the corpuscles form rouleaux it is a sign that the blood film is too thick. Should the blood not spread out immediately, one may be sure that there has been some fault in the technique, and a new specimen should be selected. *It is time wasted to try to examine a bad specimen.* It is always well to collect two or more samples before beginning the examination, as it is common to injure the first one obtained.

9. The specimen should be examined immediately after it has been withdrawn from the circulation.

10. Several specimens should be collected at different periods of the fever, because the parasites are not always found. During the period of apyrexia they may be absent from the peripheral circulation.

11. As a rule only a limited number of malarial parasites are discovered in each specimen of blood obtained, and frequently ten to fifteen minutes must be consumed before one good specimen is found.

12. The small hyalin segmenting bodies are seldom found free in the plasma. As soon as sporulation occurs they *at once* enter the red corpuscles.

13. It should be remembered that the plasmodium malariæ has a turning, twisting, rotary, or flattening-out movement, and in the later stages contains fine pigment granules in active motion.

14. As the specimen of blood becomes cold, the movements of the organism become slower and slower, and finally cease altogether.

15. It is very common to meet with foreign material and "blood dust" in the plasma, which at times may be mistaken for the non-pigmented hyalin parasites of malarial fever. The bodies may have an active Brownian movement.

16. In beginning this study one should confine his attention to the parasites within the red cells. In looking for the tertian parasite any enlarged and decolorized red corpuscle should at once arrest the attention.

17. If there be a double or triple infection, the organisms will be of different sizes.

18. Except in the estivo-autumnal type of fever a few doses of quinine will cause all organisms to disappear from the blood.

DIFFERENTIAL DIAGNOSIS OF THE PLASMODIA.

The plasmodia are differentiated in their several stages: (1) By their relative size; (2) by their activity; (3) by the color, size, and movement of the granules; (4) by the manner of segmentation; (5) by the number of segmenting bodies; (6) by the color and size of the affected red cell; (7) sometimes by the contents of the leucocytes which pick up the free pigment; and (8) by the presence or absence of ovoid, ring-shaped bodies, or crescents. If any of the latter bodies are found it is absolute evidence that at least one of the groups is the estivo-autumnal parasite. If there be infection by more than one group of parasites, some will be *young*, small (one-twentieth to one-tenth the size of the red disk), and hyalin, without pigment; while others will be *old*, almost filling the corpuscle, and will contain pigment. In their earliest stages of intracellular life the parasites of all varieties look similar, and at that period cannot be differentiated. One type of plasmodia never merges into, nor becomes converted into, a different type; but their clinical manifestations may do so. The writer only recently treated a case of estivo-autumnal fever with typical tertian paroxysms.[1] A double tertian infection would give rise to quotidian paroxysms.

1. Tertian malarial parasite—Fields Nos. 1, 2, and 3 (Field 4, normal red cells).

2. Quartan malarial parasite—Fields Nos. 5, 6, and 7 (Field 8, normal red cells).

3. Estivo-autumnal malarial parasite—Fields Nos. 9, 10, 11, and 12.

DESCRIPTION OF THE TERTIAN MALARIAL PARASITE.

The intracorpuscular parasite in its earliest stage is small (approximately one-fifteenth the size of the red blood-corpuscle), hyalin in color, and devoid of pigment (Figs. 1 and 2, Field 2). Being ameboid it has no constant shape, but its cycle of movements

[1] *Philadelphia Medical Journal*, April 14, 1900.

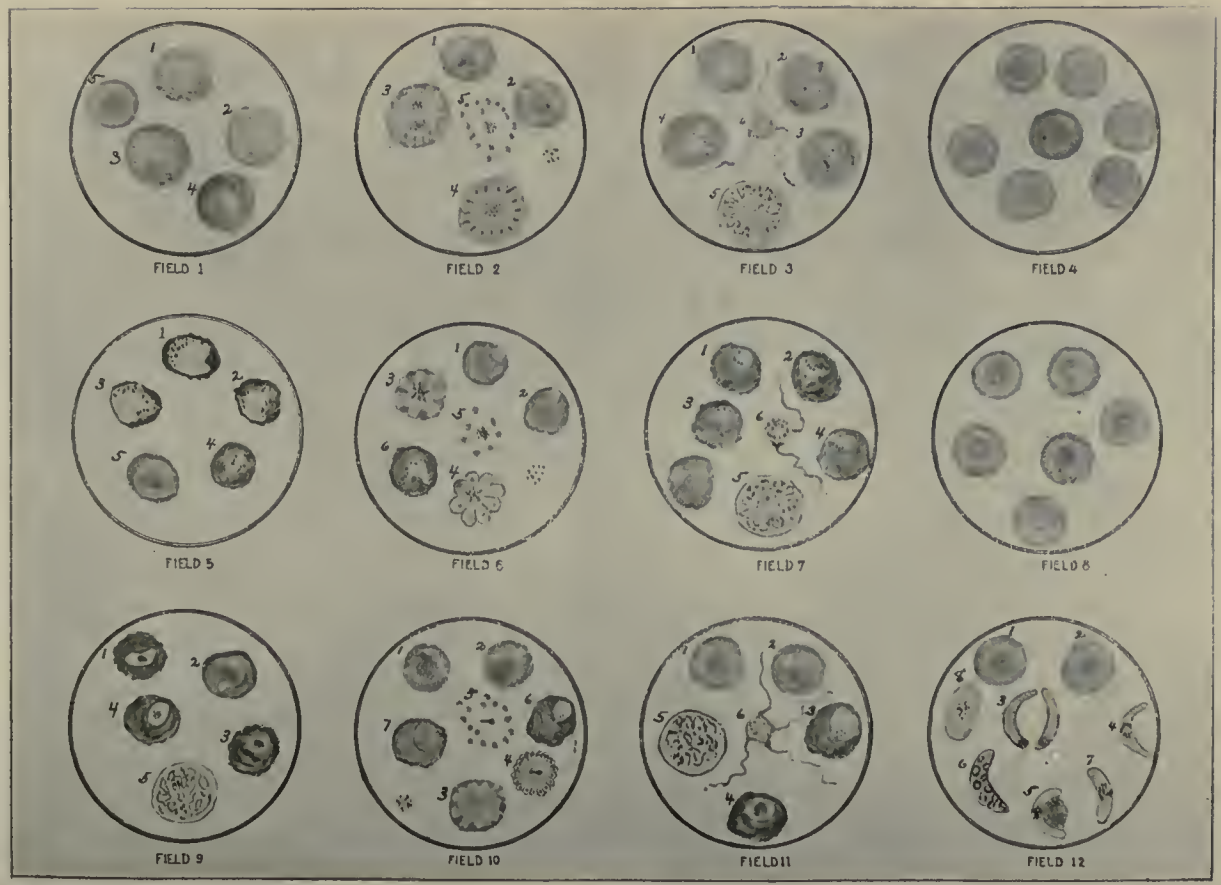

PLATE REPRESENTING THE PLASMODIA AT DIFFERENT PERIODS OF THEIR CYCLE.

[Modified from Thayer and Hewetson (Malarial Fevers of Baltimore), Von Jaksch (Physical Diagnosis), and others.]

DESCRIPTION OF PLATE.

FIELD 1.—The tertian parasite immediately before the paroxysm.

FIELD 2.—The tertian parasite during the paroxysm.

FIELD 3.—The tertian parasite during the decline of the paroxysm or period of apyrexia.

FIELD 4.—Normal red blood-corpuscles.

FIELD 5.—The quartan parasite.

FIELD 6.—The quartan parasite.

FIELD 7.—The quartan parasite.

FIELD 8.—Normal red blood-corpuscles.

FIELD 9.—The estivo-autumnal form after the fever has existed for several days.

FIELD 10.—The estivo-autumnal type found in blood taken from the spleen.

FIELD 11.—The estivo-autumnal crescents seen after first week or ten days.

FIELD 12.—The estivo-autumnal parasite. Crescents are seen after first week or ten days.

seem to assume a round contour more than any other. Occasionally its movements are twisting, rotary, dancing, or tremulous in character. As the parasite grows in age (Figs. 1, 2, 3, and 4, Field 3) it becomes larger in size and begins to accumulate reddish or brownish pigment (destroyed hemoglobin) in very fine granules within its interior, which are lashed about the body of the organism quite rapidly. An hour or two before the height of the paroxysm, the organism is full-grown and occupies almost the entire contents of the erythrocyte, which is greatly decolorized and expanded (Figs. 1, 2, and 3, Field 1). After a certain time has elapsed the pigment begins to collect near the center of the parasite into a clump, and at the same time faint striation begins near the periphery (Figs. 3 and 4, Field 2). This is the beginning stage of segmentation-sporulation (Fig. 5, Field 2) which occurs soon afterward, and is usually coincident with the chill. Segmentation may be seen in the blood taken from the peripheral circulation. From this phenomenon of the arrangement of the pigment, chills have been predicted before they have actually occurred.

The hyalin segments are from fifteen to twenty in number.

It would appear that the leucocytes do not at once pick up the free pigment granules which are thrown out into the plasma, as they do not as a rule contain the pigment until the lapse of several hours (Fig. 5, Field 3).

When specially prepared flagellated bodies may be observed within fifteen to twenty minutes after the blood has been withdrawn from the circulation (Fig. 6, Field 3).

In tertian malarial fever segmentation of the organism occurs at the end of forty-eight hours and is coincident with the paroxysm. In the tertian fever double infection occurs in a large percentage (50 per cent) of the cases, thus giving rise to quotidian paroxysms (Fig. 4, Field 1, represents a half-grown parasite).

Field 4 represents normal red cells.

DESCRIPTION OF THE QUARTAN MALARIAL PARASITE.

The intracorpuscular parasite in its earliest stages (Figs. 1 and 2, Field 6) is hyalin in color, without pigment, and has a slower ameboid movement than the tertian form. Its size is about the same as the tertian. As it grows (Figs. 1, 2, 3, and 4, Field 7) rather coarse and dark pigment granules (destroyed hemoglobin) are collected in its interior. These granules are larger and darker than that seen in either the tertian or estivo-autumnal varieties. At the end of about three days the parasite is about two-thirds the

size of the red cell, and the color of the latter has become constantly darker or brassy. As the time for the paroxysm (sporulation) comes on the pigment granules collect near the periphery of the organism in a star-shaped manner (Figs. 3 and 4, Field 6). Segmentation (sporulation) finally occurs, setting free from six to eight small unpigmented hyalin bodies (Fig. 5, Field 6). Segmentation may be seen to occur in the blood taken from the peripheral circulation. The small hyalin bodies are seldom found free in the plasma.

Compared with the tertian in its later stages it may be said to be not so large, has a sharper outline or refractive color; the growth is slower; the ameboid movement and the motion of the pigment is quite slow; the pigment dotlets are fewer in number, larger and darker, and the affected red blood-corpuscle is not decolorized nor expanded to such a marked degree, and in many instances it may appear smaller than normal, darker in color (color of old brass), and is often crenated or crumpled (Figs. 1, 2, and 3, Field 5). In quartan fever there are as a rule several groups of the parasites present at the same time in the circulation, so that several sizes may be seen (Fig. 6, Field 6, and Figs. 4 and 5, Field 5). The small hyalin forms contain no pigment.

Several hours after the paroxysm has occurred the leucocytes may contain the large dark granules set free in the plasma (Fig. 5, Field 7).

In the quartan fever sporulation occurs at the end of seventy-two hours and is coincident with the paroxysm.

When specially prepared flagellated bodies may be seen within fifteen to twenty minutes after the blood has been withdrawn from the circulation (Fig. 6, Field 7).

The quartan parasite is extremely rare in the United States.

In the quartan variety triple infection occurs in a large percentage (50 per cent) of the cases giving rise to quotidian paroxysms.

Field 8 represents normal red cells.

THE PARASITE OF ESTIVO-AUTUMNAL (SUMMER-AUTUMN) FEVER.

Synonyms: Remittent malarial fever, pernicious malarial fever. It doubtless often gives rise to the fever improperly called "typho-malarial fever."

In its earliest stages of development these intracorpuscular bodies (Figs. 1 and 2, Field 10) cannot be differentiated from the quartan or tertian parasites. Compared with the other varieties they may be said to be somewhat smaller in size (approximately $\frac{1}{25}$

the size of a red cell), highly refractive, hyalin in color, and devoid of pigment. In its earlier stages the ameboid movement closely resembles that of the tertian variety, but later becomes less active. As the organism becomes older (Figs. 2 and 3, Field 11) the periphery of the parasite becomes bright and shining in appearance and has a sharp or clear-cut outline. In the center of some of these parasites may be seen the shaded portion of the red blood-corpuscle, thus giving the organism a ring appearance (Fig. 4, Field 11). In the stained specimen this ring portion shows very clearly and frequently contains deeply stained granules.

The largest sized parasites seen in the peripheral circulation immediately before the onset of the paroxysm are probably one-half the size of the red disk (Figs. 1 and 4, Field 9). The pigment granules are collected into a clump near the center. At this stage it is believed to seek the internal organs (spleen and bone marrow), where it undergoes segmentation (sporulation). (Figs. 3, 4, and 5, Field 10.) Segmentation in this variety does not occur in the peripheral (?) circulation.

The segmented bodies number from fifteen to twenty (same as tertian). The affected erythrocyte, instead of being expanded and decolorized (as in tertian), often becomes darker and crumpled (Figs. 1, 3, and 4, Field 9).

Several hours after sporulation has occurred the leucocytes may contain the pigment granules which have been picked up from the plasma (Fig. 5, Field 11, and Fig. 5, Field 9).

When specially prepared flagellated bodies (Fig. 6, Field 11) may develop within fifteen to twenty minutes after the blood has been withdrawn from the circulation.

In the estivo-autumnal fever there is generally an infection by several groups of parasites which sporulate at different intervals, and thus there may be present many different sized groups at the same time (Figs. 1, 2, 6, and 7, Field 10; and Figs. 1, 2, 3, and 4, Field 9). From this fact in this variety of infection there may be quotidian (50 per cent), tertian, *irregular*, or *intermittent fever* (33 per cent). After the fever has existed for a period of from seven to ten days certain characteristic bodies are seen which occur in no other form of fever; these are the crescent-shaped parasites (Figs. 3, 4, 5, 6, and 7, Field 12) and ovoids (Fig. 8, Field 12). The crescents are usually seen free in the plasma. They generally contain a few fine pigment granules arranged in a round or oval shape near their center. This pigment has a dark reddish tint in the unstained specimen. In certain instances vacuolization may be observed

(Fig. 6, Field 12). A process of gemmation has been observed in the ovoid bodies, and ovoids have been seen to change into crescents.

Fig. 8, Field 12, represents an ovoid body. Figs. 1 and 2, Field 12, represent normal red blood-corpuscles.[1]

The estivo-autumnal parasite is very common, especially in the southern part of the United States; it is resistant to the action of quinine, and has a tendency to relapse. It is probably this form which most frequently gives rise to malarial hemoglobinuria. In all varieties of malarial fever granular pigment (hemoglobin) in considerable quantity may be found free in the plasma (Fields 2, 6, and 10). It is abundant just after a paroxysm, and if excreted by the kidneys in excessive amount gives rise to malarial hemoglobinuria, and in the absence of a microscopic examination is mistaken for hematuria. The neglect of a microscopic examination in these cases has caused much confusion in regard to this condition.

PRODUCTS IN THE BLOOD WHICH MAY BE MISTAKEN FOR THE PLASMODIA.

1. That which takes the first rank as a source of error in this examination is failure to obtain a good specimen of blood. Failure in this respect results from (*a*) an improper puncture, and (*b*) unclean cover-slips or slides. Neglect of proper precautions will vitiate the results in both the fresh and stained specimens. In studying the fresh blood quickness and dexterity of movement in collecting the specimen is demanded, otherwise crenation will occur and render the blood film worthless. The three most essential requisites are therefore: (1) a puncture deep enough to make the drop of blood appear immediately (pressure aids this); (2) clean cover-slips and slides; and (3) dexterity of movement in transferring the specimen.

2. Another frequent source of error is to mistake the vacuoles of red cells for hyalin malarial parasites. During the process of necrobiosis the red cells take on a peculiar tremulous or wavy motion which is imparted to the contained protoplasm. At this time vacuoles of different sizes and shapes may be seen within the red corpuscles. In this clear space no pigment of course is seen, and it is motionless. In stained specimens prepared by overheating they are very common.

3. After the death of the red corpuscle, small, round, colorless (hyalin) bodies (one-twentieth to one-quarter the size of a red cell),

[1] See also *Medical News*, Feb. 13, 1897.

with a sharp or clear-cut outliue, may frequently be seen within the red cell. They are motionless. These bodies are abundant in the stained specimen improperly prepared by overheating, and may also be found in specimens prepared by fixation in ether and alcohol. In focusing up and down they change in appearance and color, while the malarial parasite does not do so.

4. Occasionally the hemoglobin will collect in certain portions of the erythrocyte, assuming peculiar shapes (mostly oval), but without motion.

5. The ameboid motion of the white blood-corpuscle (polymorphonuclear leucocyte) is not infrequently mistaken for the full-grown malarial parasite. Its nuclei will of course be easily recognized after some practice.

6. Minute colorless, highly refractive granules may be seen free in the plasma—the so-called "blood dust." They generally result from disintegration of the red cells and leucocytes. Fat particles and ordinary dust may also be fouud in many specimens. These foreign elements often have an extremely rapid Brownian movement, which I have observed even after several days, and even though the slide be turned vertically. The particles usually take the course of the spaces between the corpuscles, but not infrequently roll around and lodge immediately over a red cell. Peculiar motile microorganisms which make their habitat on the normal skin may also be introduced in making the puncture. It should be remembered that the hyalin segmenting malarial parasites are seldom found free in the plasma.

7. Small reddish particles of destroyed hemoglobin of different sizes and shapes may also be seen in the plasma in normal blood.

8. Foreign bodies are differentiated from the malarial parasite by focusing up and down, when the former material is seen to have sharp edges and changes its color and shape, in contradistinction to the malarial parasite, which does not change its shape on change of focus, but becomes easily visible or fades away gradually in the protoplasm of the red corpuscle. In searching for the malarial parasite the best focal point seems to be that at which the shaded central portion of the red cell is most plainly visible.

9. The beginner should spend several months in the study of the normal blood, and in the study of the plasmodia should confine his attention to the parasites within the red cells.

10. It may again be stated that the malarial parasites are as a rule relatively few in number in each drop of blood obtained, and frequently fifteen minutes may be required to find a *single specimen*.

TO STAIN THE SPOROZOA OF MALARIAL FEVER.

After learning the characteristics of the different forms of plasmodia in the fresh specimen of blood, the staining methods may be used. The method is as follows: Make the puncture as advised in the fresh specimen, and after pressing out and brushing away the first two or three drops of blood the clean cover-slip (which is held in the forceps) is quickly touched to the summit of the drop and then immediately placed upon another slip, which is at once separated by sliding the upper one along in the plane of their surfaces—never lift them apart. The lower cover-glass is generally the best.

The blood is then fixed by heat, preferably in a dry sterilizer or oven. In the absence of the sterilizer secure a plate of copper fifteen or eighteen inches long, one-eighth to one-sixth inch thick (thinner will not do), and three inches wide, and heat for fifteen or twenty minutes by placing at one end a Bunsen burner or oil lamp provided with a double wick, or Rochester burner. The preliminary heating is absolutely necessary in order that the proper temperature may become fixed at one point and not crawl along the copper plate. The entire apparatus must be well protected from all draughts by means of a wide piece of tin or be placed in a closed room.

The proper temperature to heat the specimen is from 239° to 248° F. (115° to 120° C.), which is determined by collecting a few drops of water in a pipette and thrown somewhat forcibly along the upper surface of the copper plate in the direction of its cooler extremity. The drops of water soon cease rolling, and the point where the drop suddenly stops will generally correspond to about 248° F. or 120° C. It is safer to place the drop of blood an inch or two nearer the cooler end than this point to prevent overheating.

After the blood has been dried thoroughly in the air it is then placed (smeared side upward) upon this plate at the point designated and allowed to remain from fifteen to thirty minutes, continuing the heat all the time. It should then be removed and stained. Only the purest stains (Grübler's) should be used. In using saturated solutions, or any of the stains in which there is a precipitate, only the supernatant liquid should be employed. In this way many small foreign particles will not be scattered broadcast over the specimen. It is best to remove it carefully with a pipette. One of the best and most reliable stains is that of eosin and methylene blue.

After removal from the plate the specimen is covered over with a ¼- to ½-per-cent solution of eosin in 50-per-cent alcohol and stained in the cold from three to five minutes. It is then washed in

water for a minute (eosin stains the red cells intensely), and the excess of water is removed carefully with a blotter. After the specimen is dry it is then counter-stained (also in the cold) for five minutes with a saturated aqueous solution of methylene blue, washed for half a minute, dried with blotting-paper or in the air, and mounted in Canada balsam. By this method the red cells are stained a pinkish color, the plasmodia blue, and the pigment remains very dark. The nuclei of the white blood-corpuscles stain blue.

Staining by Plehn's solution is as follows: Fix the specimen by heat as advised, and use:

Saturated aqueous solution of methylene blue	f ʒ ij.
One-half per cent of eosin in 75-per-cent alcohol	f ʒ v.
Distilled water	f ʒ x.
Twenty-per-cent sodium hydrate solution	12 drops.

Stain the specimen from five to six minutes, wash in running water, dry thoroughly in the air or pass through the flame of an alcohol lamp, and mount in Canada balsam. The red cells are stained a rose pink, the plasmodia and leucocytes blue.

In making the examination the attention should be confined to the bodies within the red cells.

Plehn recommends that the specimen of blood be fixed by immersing in absolute alcohol from three to five minutes. If this method be used the specimen should not be washed in running water, as frequently the red corpuscles become detached.

PRODUCTS IN THE STAINED SPECIMEN OF BLOOD WHICH MAY BE MISTAKEN FOR PLASMODIA.

As in the fresh specimen, so in this method there is a fertile field for error. It is probably best to spend several months in general blood work before beginning it.

The three most common errors committed in examining the stained specimen are, perhaps: (1) failure to collect the blood properly; (2) carelessness in placing the stain upon the specimen; and (3) overheating the specimen.

1. As in the fresh specimen, small, round, unstained, highly refractive bodies may be seen in the red corpuscles. These products result from the process of necrobiosis of the red corpuscles. They are very abundant in overheated specimens. In some samples fixed with ether and alcohol they have a yellowish or crystalline tint when present in the red disks. They are frequently seen scattered free in the plasma. When the blood has been stained by Ehrlich's method many small pinkish dotlets are observed.

Wernicki[1] has called attention to certain morphologic elements which stain differently in a specimen of blood. These are due to the disintegration of the different leucocytes.

2. The karyokinetic figures of the leucocytes should not be mistaken for the malarial parasites. A knowledge of general blood work will of course prevent this gross error.

If crescent or ringed-shaped organisms are found, this fact at once denotes infection by the estivo-autumnal parasite.

3. Another frequent error made by beginners is to mistake the clear spaces (vacuoles) in the red cells for malarial parasites. These vacuoles are very common in specimens fixed by ether and alcohol, particularly if the blood has not thoroughly dried when it is immersed. In some instauces small blue foreign particles may be found in them, giving rise to peculiar pictures. They also occur in overheated specimens.

4. Very large, irregular, jagged hyalin crystals and irregular deep blue masses are seen free in the plasma, which are doubtless due to disintegrated blood-corpuscles.

[1] *Centralblatt für die All-Pathologie und Path. Anatomie*, March 1, 1897.

THE ELECTROCAUTERY IN NOSE AND THROAT DISEASES.

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Of late the use of the electrocautery appears rather less popular, and submucous puncture and other procedures have been advocated in its stead. I believe that with care in its use it is one of our most valuable and simple therapeutic agents. It has the advantage over acids that the effect can be accurately limited, and it can be made to penetrate deeper. In books and journals we often see statements that this mode of treatment is a frequent cause of conditions worse than those for the relief of which it was applied. It is claimed that it may be followed by persistent dryness, perhaps even an atrophic state of the nose as a permanent result. A sepsis of greater or less severity, often attended by tonsillitis and occasionally by acute otitis media, may be an immediate consequence. Synechiæ between the turbinates and the septum, sometimes amounting to broad bands and producing serious obstruction, are also said to follow the use of the electrocautery. In my own experience I have not seen persistent dryness nor atrophic conditions so produced, nor have I observed synechiæ except when the saw or knife had been used. In a number of cases, however, there have been mild septic symptoms, and in a few a sharp tonsillitis. In two cases I have seen septic suppurative inflammation of the middle ear. Looking back on these cases they seem to have been caused by defective attention on the part of the patient, and perhaps on my own part to the after-treatment. With frequent and thorough cleanliness they can almost always be avoided.

The following conditions are those in which I have found the electrocautery most useful: In broad hypertrophies over the turbinate bones, usually attended by erection of the turbinal tissue. In such cases, after shrinking the tissues by the alternate use of cocaine in four-per-cent solution and of a solution of suprarenal gland, I make a deep linear cauterization over the most prominent portion. Where the hypertrophy is at the edge of the turbinates and obstructing the meatus, we can get more rapid and satisfactory results by the snare.

In another and numerous class of cases I use the electrocautery because it is the best local treatment I know of, and yet its use seems not to rest on proper principles. I refer to those cases in

which there is a loss of tone in the vasoconstrictors of the turbinate blood-vessels, causing frequent stopping up of the nostrils, generally affecting first one side, then the other. Bosworth is of the opinion that this symptom is produced by septal ridges or deflection. I have often seen it when the septum was normal, and believe it is frequently a part of a general lack of tone in vessels. The most rational treatment would appear to be hygienic and medicinal, and these lines of treatment are in many cases valuable. Outdoor exercise, a simple diet, frequent baths, and attention to the clothing may, and in some cases do, accomplish much. The uric acid diathesis is an occasional cause of the condition and should receive attention. The use of belladonna, strychnine, and phosphide of zinc is sometimes followed by excellent results. Especially is this true of those cases attended by paroxysms of sneezing and watery discharge. But too often the stuffy nose continues a frequent annoyance, and I know of no better treatment than to pin down the erectile tissue to the bone beneath. Even this has not always been satisfactory in my hands. On the septum I rarely use the electrocautery. Two conditions occasionally call for it: (1) Marked thickening of the so-called tubercle of the septum, obstructing the middle portion of the nasal passage. Here two or three linear cauterizations have been useful. (2) In frequent hemorrhages from an erosion on the lower anterior part of the septum, provided these hemorrhages are not attributable to other disturbance of circulation, touching the erosion with the electrocautery does some good. It is less valuable than it is claimed to be in this condition. Formerly I applied the cautery to hypertrophies and turgescence at the posterior end of the inferior turbinates, but of recent years I have used nothing but the snare for these conditions. In many cases they do not demand treatment. In some cases after removing a nasal polyp by the snare, its base should be touched with the electrocautery.

The conditions in the throat which are most often helped by the electrocautery are: (1) Deep-seated follicular inflammation of the tonsils, especially in the shrunken tonsil hidden within its folds. (2) Enlarged lymph follicles on the posterior pharyngeal wall—the so-called granular sore throat—a common cause of clearing the throat and a little hacking cough, and an occasional cause of pain. (3) Mycosis of the fauces. Here the small spear-like projections grow from the faucial and lingual tonsils. They are difficult to remove and tend to recur. Electrocautery is the best treatment. (4) Enlargement of the veins at the base of the tongue. This condition may cause the sensation of a foreign body in the throat, and

quite frequently causes a small amount of blood to be spit up, especially in the early morning. (5) Enlargement of the adenoid tissue between the base of the tongue and the epiglottis — the so-called lingual tonsil. This is a frequent cause of the tendency to swallow when there is nothing to be swallowed—known as "empty swallowing"—and of a feeling of fulness in the throat and some disturbance of the voice, with or without laryngitis.

PANCREATIC DIGESTION FROM THE STANDPOINT OF THE COMPARATIVE ANATOMY OF THE BILE AND PANCREATIC DUCTS IN MAMMALS.

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In 1891 I published a paper in the *Journal of Physiology* on "The Influence of Bile on the Fat-splitting Properties of Pancreatic Juice." In this paper I demonstrated the important physiological fact that rabbits' bile expedites the fat-splitting properties of rabbits' pancreatic juice in the ratio of 3 to 1. Reasoning by analogy from these experiments, I concluded that when the fresh bile of any animal is mixed with the fresh pancreatic juice of the same animal it will enable the pancreatic juice to split fats much more rapidly than if the juice were acting alone. If this inference be true it follows (since fat-splitting is a necessary preliminary step in fat digestion) that all animals which have a common opening for their bile and pancreatic ducts are, by reason of this anatomical arrangement, much better endowed for the digestion of fats than those animals which do not have a common opening for these ducts. For these reasons one would expect to find, in all animals taking a quantity of fat in their food, such anatomical conditions as would provide for the preliminary mixing of bile and pancreatic juice before they commenced the work of fat digestion.

In the same paper I further demonstrated that if fresh rabbits' bile be added to fresh rabbits' pancreatic juice, acting in the presence of a 0.25-per-cent solution of hydrochloric acid, the bile not only neutralizes the retarding influence of the hydrochloric acid on the fat-splitting properties of pancreatic juice, but it also acts more powerfully in hastening this action of pancreatic juice when it is combined with the hydrochloric acid than it does when acting alone. If this physiological fact may be applied to the study of fat digestion in other animals, then one may infer that the pancreatic digestion of fats in all animals is promoted by the presence of bile and a small percentage of hydrochloric acid. Following this argument one is led to conclude that, in animals taking a large quantity of fat in their food, the bile and pancreatic juice should not only be poured into the duodenum through a common opening, but this common opening should be near the pylorus so as to provide for the mixing of the bile and pancreatic juice with the acid contents from the stomach high up in the duodenum.

In this same paper, in which the importance of bile in fat digestion was demonstrated, attention was called to the fact that the

presence of a gall-bladder served an important purpose in fat digestion, in that it supplied bile in large quantities and at the proper time to assist the pancreatic juice in splitting fats. Animals which take considerable fat in their food should therefore be provided with gall-bladders.

It was further demonstrated in this same paper that 0.25 per cent of sodium carbonate (the amount which the succus entericus is supposed to contain) would greatly retard the fat-splitting properties of pancreatic juice. I therefore concluded that in animals taking considerable fat in their food the anatomical conditions should be such as to retard the rate of passage of foodstuffs through the duodenum, so that the fats may be exposed to the action of pancreatic juice in the duodenum long enough for the requisite amount of fat-splitting to be accomplished. Otherwise the food would be hastened along the intestines and into the presence of sodium carbonate, which would retard fat-splitting and consequently interfere with fat digestion.

In 1899 I published a second paper in the *Journal of Physiology* on "The Influence of Bile, of Acids, and Alkalies on the Proteolytic Action of Pancreatic Juice." In this paper I demonstrated that rabbits' bile, when added to rabbits' pancreatic juice, acting upon neutral fibrin, will markedly stimulate the proteolytic power of the juice; in most of the experiments the juice was able to do one-fourth more work in proteolysis by reason of the presence of the bile. From this physiological fact one may reason by analogy that the fresh bile of any animal will increase the proteolytic power of the fresh pancreatic juice of the same animal. If this reasoning be well founded, then one may conclude that the preliminary mixing of the bile and pancreatic juice which occurs in some animals serves an important physiological purpose in proteid digestion, and that all animals taking a large quantity of proteids in their food should have such an anatomical arrangement of their bile and pancreatic ducts as will provide for the mixing of the bile and pancreatic juice either before or directly after they are brought into contact with the food. It follows also that these animals should be provided with gall-bladders that the bile may be supplied in proper quantities and at the proper time to satisfy the demands of the pancreatic digestion of proteids.

In this same paper my experiments "led me to the conclusions that a small quantity of combined hydrochloric acid, not greater than one-half saturation, will but slightly diminish the proteolytic action of rabbits' pancreatic juice, and that when rabbits' bile is added to these mixtures the retarding influence of the hydrochloric acid is not only neutralized but an actual increase in proteolysis is attained."

If this principle of proteid digestion holds good in all animals, then one would expect to find in proteid-eating animals that the bile and pancreatic juice was poured into the duodenum not only through a common opening, but that this common opening was near the pylorus.

In 1899 I published a paper in the *American Journal of Physiology* on "The Diastatic Action of Pancreatic Juice." From the experiments recorded in this paper the conclusion was drawn that bile plays a rather unimportant rôle in starch digestion. It is in fact not necessary to the diastatic action of pancreatic juice when the juice is acting in neutral or slightly alkaline solution, but the bile may be of great assistance to pancreatic juice—indeed, almost necessary to its full diastatic action—when the former is acting in the presence of free acid. It was also shown in this paper that both albumen and bile would when combined with a small amount of hydrochloric acid somewhat increase the diastatic action of pancreatic juice over the amount of work it could do in neutral solution. If these experiments may be taken as evidence of the unimportance of bile in the diastatic action of pancreatic juice in all animals, then one may conclude that no important physiological purpose would be served by the union of the bile and pancreatic ducts in animals purely herbivorous, and that there is no apparent physiological reason why these animals should be provided with gall-bladders.

In the above outline I have briefly reviewed a portion of the work which I have done during the past few years on the digestive action, on various foodstuffs, of rabbits' pancreatic juice acting under various conditions, and from these observations I have attempted to make out the anatomical conditions which would best serve the physiological purposes of pancreatic digestion in different animals. In following out this line of reasoning I have assumed that variations in the structure of the digestive organs of different animals had been determined by the physiological laws of food digestion. I have also assumed, and in this assumption there may be room for doubt, that the physiological laws of pancreatic digestion are the same in all animals.

The above observations, however, derive their importance not so much from the arguments which they contain as from the fact that they are to offer corroborative testimony to the physiological conclusions which will hereafter be drawn from anatomical data.

With this prelude I shall now attempt certain conclusions concerning the laws of food digestion, from a study of the comparative anatomy of the digestive organs of various animals. In this study I have classified all animals, according to the character of their food,

as herbivorous, carnivorous, or omnivorous. It is assumed that the herbivorous animals partake chiefly of starch, the carnivorous and insectivorous chiefly of proteids and fats, and the omnivorous of a fair proportion of all these foods.

"In a comparative anatomy study of the kind here attempted, the difficulties are many and the liabilities to draw false conclusions from misinterpreted and incomplete anatomical data are very great. While one may assume without fear of contradiction that the various anatomical arrangements of the bile and pancreatic ducts in different species of mammals have a definite physiological significance, and that for the most part this anatomical arrangement has resulted, by natural selection, from the physiological laws controlling the digestion of food, yet even with this preface it is impossible for one to estimate in an accurate way the proportionate influence which the various physiological laws may have had in the development of the existing anatomical conditions. For example, one cannot say that such physiological conditions as the presence of a gall-bladder discharging its bile through a duct, common to it and the pancreas, into the duodenum in close proximity to the pylorus were developed in the carnivora exclusively as a result of the physiological laws of fat digestion; nor can one say that the physiological laws of proteid digestion have exclusively determined these conditions. At best one can only approximately estimate, from existing physiological facts, the proportionate influence which either of these factors may have had in determining the various anatomical arrangements of the bile and pancreatic ducts in mammals.

"A source of error, in attempting to draw physiological conclusions from anatomical data, lies in the fact that there are always minor accessory anatomical conditions, the physiological importance of which it is difficult to estimate. For example, in the carnivora and many omnivora I have noted the following anatomical peculiarities of the duodenum: It has a horseshoe shape, its convexity looking downward; it gradually diminishes in caliber, being smallest at its junction with the jejunum; it is closely attached to the head of a fleshy pancreas and has a short mesenteric attachment, for which reasons it is much less movable than is this portion of the small intestine in the herbivora. These anatomical peculiarities of the duodenum in the carnivora and in some omnivora no doubt have a great influence in diminishing the rate of passage of foodstuffs through the duodenum, and in this way they increase the duration of the exposure of food to the combined action of the pancreatic juice and bile in the duodenum. But it is impossible to estimate what influence such accessory anatomical conditions as

these may have (by modifying the influence of the physiological laws of food digestion) in determining the anatomical arrangements of the bile and pancreatic ducts in different species of mammals. Errors of inference from this cause must therefore remain in great part uncorrected.

"Another liability to error, in such a study as this, results from assuming that the same organs in different orders of mammals always do the same kind of work. For example, the stomachs of the carnivora and of the herbivora are very different organs, and are capable of very different kinds of physiological work. And here again it is not possible to estimate the influence which differing anatomical conditions, in other portions of the digestive tract, may have had in modifying the influence which the duodenal digestion of foodstuffs has had in determining the various arrangements of the bile and pancreatic ducts in different mammals.

"Another and most important cause of error, in making physiological deductions from comparative anatomy data, is that the primitive type from which the animal is descended is an influential factor in determining structure in all subsequent generations. For example, the seal and the porpoise are descended from very differently constructed ancestors, and this fact no doubt accounts for the presence of a gall-bladder in the seal and its absence in the porpoise, notwithstanding the fact that for numberless generations both have been purely fish-eaters."

Notwithstanding these difficulties, I shall attempt to make physiological deductions from such comparative anatomy data as I have been able to collect. The following tables I have taken from a former article of mine published in this journal in December, 1895, and due acknowledgment is hereby made not only for these tables, but for the above quotation.

QUADRUMANA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Man	8 cm.	Yes.	8 cm.	Omnivorous.
Troglodyte Gorilla	25 cm.	Yes.	25 cm.	Herbivorous.
Chimpanzee (*Troglodytes niger*)	15 to 20 cm.	Yes.	15 to 20 cm.	Herbivorous.
Common Macaque Monkey (*Macacus cynomolgus*)	3 cm.	Yes.	3 cm.	Omnivorous.
Capuchin Monkey (*Cebus capucinus*)	2 cm.	Yes.	2 cm.	Insectivorous.
Lemur, nocturnal (*Indris brevicaudatus*)	3 cm.	Yes.	3 cm.	Insect. chiefly.
Lemur, diurnal (*Lemur mongoz*)	7½ cm.	Yes.	7½ cm.	Omnivorous.
Lemur, ruffed (*Lemur varius*)	1¼ cm.	Yes.	1¼ cm.	Insect. chiefly.

This table contains three insectivorous animals, namely, the Capuchin monkey, the nocturnal lemur, and the ruffed lemur. It will be observed that in these animals the common openings of the bile and pancreatic ducts are placed very near the pylorus. If this location of the common duct be compared with its location in the herbivorous gorilla and chimpanzee, which belong to this same species, the contrast is very striking. In the gorilla the common duct is located 25 centimeters from the pylorus, and in the ruffed lemur it approaches as near as one and a fourth centimeters. If one assumes that the anatomical conditions as they occur in these animals serve the best purposes of food digestion, then one must infer that this anatomical arrangement which gives to insectivorous animals a common opening for their bile and pancreatic ducts and places this common opening near the pylorus serves an important physiological purpose in the digestion of fats and proteids—the chief foodstuffs of these animals. From these facts one may infer that the preliminary mixing of bile and pancreatic juice before they enter the duodenum is of physiological importance in the digestion of fats and proteids, and this inference will be strengthened into a conclusion by a study of subsequent tables. From this table one may also infer that this preliminary mixing of bile and pancreatic juice is of importance in the digestion of starchy foods, since both the herbivorous chimpanzee and gorilla have a common opening for the bile and pancreatic ducts; but a study of subsequent tables will show that this inference is fallacious. An important physiological inference, however, which may be made from the above table is that the pancreatic digestion of fats and proteids as it occurs in insectivora is facilitated by bringing the bile and pancreatic juice in contact with the food very soon after it leaves the stomach, and that the pancreatic digestion of starches as it occurs in herbivora is not facilitated by bringing these juices in contact with the food high up in the duodenum. If one remembers that the duodenal contents, in the carnivora, are acid, and that the food as it leaves the stomach contains more or less combined hydrochloric acid, one is led to the inference that the pancreatic digestion of fats and proteids is facilitated in the insectivora not only by the bile, but also by such acids as may be combined with the foodstuffs as they enter the duodenum. If these inferences be not true, then no apparent physiological purpose is served by placing the common bile and pancreatic ducts near the pylorus in the Capuchin monkey, nocturnal lemur, and ruffed lemur, the three insectivora in the above table.

These inferences concerning the laws which govern the digestion

of fats and proteids in the insectivora are of more value as they are compared with the inferences made from the same table concerning the pancreatic digestion of starches in the herbivorous chimpanzee and gorilla. If one may assume that starch digestion in these animals is facilitated by the anatomical arrangement which pours the bile and pancreatic juice into the duodenum 20 to 25 centimeters below the pylorus (since the lower portion of the duodenum is alkaline in the herbivora), then will follow the inference that pancreatic juice assisted by the bile can do its best diastatic work in a feebly alkaline medium. If on the other hand an acid medium is much more favorable to the diastatic action of pancreatic juice than an alkaline, then would the bile and pancreatic ducts be placed in the herbivora, as they are in the carnivora, high up in the duodenum near the pylorus. The inference therefore seems plain that an acid medium has no advantages over an alkaline medium in the pancreatic digestion of starches. That the pancreatic juice prefers an alkaline medium for the digestion of starches is also indicated by the fact, above referred to, that in the herbivora the intestinal contents lose their acidity sooner and become more alkaline than in the carnivora, and also by the fact that the bile of herbivorous animals has a greater degree of alkalinity than the bile of the carnivora.

If one again refers to the table it will be seen that the omnivorous animals of this species, viz., man and the diurnal lemur, have the common opening of their bile and pancreatic ducts not so near the pylorus as the carnivora nor so far away as the herbivora, which would indicate that nature had compromised on this mid-distance as between the extremes demanded by the laws of food digestion in the purely carnivorous and herbivorous animals.

CHEIROPTERA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Fruit Bat (*Pteropus Edwardsii*).....	12½ cm.	Yes.	12½ cm.	Herbivorous.
Insect Bat (*Vespertilio noctula*).....	½ cm.	Yes.	½ cm.	Insectivorous.

This table is here inserted in support of the above inferences drawn from the Quadrumana. The contrast is very striking between the location of the openings of the common bile and pancreatic ducts in the fruit-eating and the insect-eating bat. The insectivorous bat, which takes a large quantity of fats and proteids in its food, has the

common opening of bile and pancreatic ducts immediately below the pylorus, where these juices may come in contact with the acid foodstuffs as they leave the stomach; while in the fruit bat this opening is 12½ centimeters from the pylorus. The marked difference that here exists in the location of these ducts emphasizes the great advantage in food digestion which must accrue to the carnivorous animals in having the common opening of the bile and pancreatic ducts in close proximity to the pylorus, and it also emphasizes the fact, above noted, that this anatomical arrangement is of no physiological advantage to herbivorous animals, otherwise the bile and pancreatic juice would enter the duodenum of the fruit bat, as it does in the insect bat, near the pylorus, instead of 12½ centimeters below.

CARNIVORA.

Species and Name of Animal.	Common opening of bile and pancreatic ducts is from pylorus:	Distance between bile and pancreatic ducts.	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Lion (*Felis leo*)	6 cm.	.....	Yes.	6 cm.	Carnivorous.
Tiger (*Felis tigris*)	5 cm.	.....	Yes.	5 cm.	Carnivorous.
Leopard (*Felis Leopardus*)	4 cm.	.....	Yes.	4 cm.	Carnivorous.
Domestic Cat (*Felis domestica*)	2½ cm.	.....	Yes.	2½ cm.	Carnivorous.
Wildcat (*Felis Lynx rufus*)	3 cm.	.....	Yes.	3 cm.	Carnivorous.
Lynx (*Felis Lynx canadensis*)	Near.	.....	Yes.	Near.	Carnivorous.
Panther (*Felis cancolor*)	Near.	.....	Yes.	Near.	Carnivorous.
Coyote, American (*Canis latrans*)	.....	3.8 cm.	Yes.	2.6 cm.	Carnivorous.
Wolf (*Canis lupus*)	Near.	On same level.	Yes.	Near.	Carnivorous.
Fox, African (*Canis Vulpes niloticus*)	.....	5½ cm.	Yes.	½ cm.	Omnivorous.
Fox, European (*Canis Vulpes vulgaris*)	.....	5½ cm.	Yes.	Near.	Omnivorous.
Dog, Japanese (*Canis Nyctereutes procyonides*)	.....	5½ cm.	Yes.	3 cm.	Omnivorous.
Dog, domestic (*Canis familiaris*)	5 cm.	Accea. pan. duct, from pyl. 7½ cm.	Yes.	5 cm.	Omnivorous.
Skunk (*Mephitis mephitica*)	2½ cm.	.....	Yes.	2½ cm.	Carn. chiefly.
Badger (*Meles vulgaris*)	.....	2 cm.	Yes.	.....	Omnivorous.
Brown Bear (*Ursus arctus*)	Acces. pan. duct.	Above bile duct.	Yes.	.....	Omnivorous.
Raccoon, Albino (*Ursus Procyon lotor*)	4 cm.	.....	Yes.	4 cm.	Omnivorous.
Coati, Mexican (*Ursus Nasua narica*)	3 cm.	.....	Yes.	3 cm.	Insectiv., etc.
Hedgehog (*Insectivora Erinaceus europæus*)	2 cm.	.....	Yes.	2 cm.	Insectivorous.

It will be noted that twelve of the nineteen animals in the above table are carnivorous, and that in all of these carnivorous animals, excepting the American coyote, the bile and pancreatic juice are poured into the duodenum in close proximity to the pylorus either through a common opening or through separate openings entering

the duodenum on the same level, thus providing for the mixing of the bile and pancreatic juice immediately they are poured into the duodenum. Even in the American coyote the distance—3½ centimeters—between the openings of the bile and pancreatic ducts is so short that it may hardly be considered as an exception to the rule that carnivorous animals have an anatomical arrangement which provides for the mixing of bile and pancreatic juice before, or directly after, their entrance into the intestine. It is interesting to note in this table that in the large animals like the lion, the tiger, and the leopard, which are exclusively carnivorous, the common bile and pancreatic duct approaches so closely to the pylorus (from 4 to 6 centimeters) that one must believe there is decided physiological advantage in this arrangement which provides that the bile and pancreatic juice shall come in contact with acid foodstuffs immediately after they are discharged from the stomach. It appears in fact from the study of the comparative anatomy of the bile and pancreatic ducts in all the herbivorous, omnivorous, and carnivorous animals in the tables here presented that one may formulate the rule that *the more strictly carnivorous the animal, the more closely will the opening of the common bile and pancreatic duct approach the pylorus.* These facts surely justify us in concluding that the pancreatic digestion of fats and proteids is facilitated by the presence of bile and combined acids to the extent that they exist in foodstuffs high up in the duodenum, and warrant us in concluding that the fundamental principles which govern fat and proteid digestion in the carnivora are the same as in the rabbit, since, as noted in the preface, laboratory experiments with the bile and pancreatic juice of this latter animal lead to the same physiological conclusions.

In the above table, however, special interest attaches to a study of the arrangement of the bile and pancreatic ducts in the seven omnivorous animals. Here one finds that the African fox, the European fox, the Japanese dog, and the badger have separate openings for their bile and pancreatic ducts. In the first three the pancreatic juice is poured into the duodenum 5½ centimeters below the opening of the bile-duct. In the other three omnivorous animals in this table, namely, the domestic dog, the brown bear, and the raccoon, one finds in two of these animals an accessory pancreatic duct opening below the common duct; and in only one, the raccoon, do we find all of the bile and pancreatic juice poured through a common opening into the duodenum in close proximity to the pylorus. It is quite evident, therefore, from a study of this table that in omnivorous animals there is less physiological necessity

than in the carnivora for the preliminary mixing of the bile and pancreatic juice before they come in contact with foodstuffs. The physiological importance of this variation will appear in the following table:

PACHYDERMATA.

Species and Name of Animal.	Common opening of bile and pancreatic ducts is from pylorus:	Distance between bile and pancreatic ducts.	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Horse (*Equus caballus*).....	15 cm.	.....	No.	15 cm.	Herbivorous.
Ass (*Equus asinus*)	15 cm.	.....	No.	15 cm.	Herbivorous.
Elephant (*Elephas indicus*)....	10 cm.	Accessory duct 5 cm. lower.	No.	10 cm.	Herbivorous.
Tapir (*Tapirus americanus*)....	.....	Same level, common opening.	No.	.....	Herbivorous.
Pig (*Sus familiaris*).....	.....	10 to 20 cm.	Yes.	2 to 5 cm.	Omnivorous.
Rhinoceros (*Rhinoceros unicornis*)	15 cm.	Same level.	No.	15 cm.	Herbivorous.
Hyrax (*Hyrax capensis*).....	2½ cm.	One 2 cm. lower.	No.	2½ cm.	Herbivorous.

In this table we have emphasized the unimportance of the gall-bladder in herbivorous animals. The omnivorous pig is the only animal in the table provided with a gall-bladder. In all of the six herbivorous animals it is absent. The absence of the gall-bladder in these herbivorous animals clearly indicates the unimportance of this organ in starch digestion. The presence of a gall-bladder in all carnivorous animals indicates that there is a physiological necessity for a reservoir of this kind for holding the bile so that it can be discharged in quantity into the duodenum during the pancreatic digestion of fats and proteids. That this reservoir for bile is unnecessary in herbivorous or starch-eating animals is clearly proven by the fact that it gradually diminishes in size as the animal takes less fat and proteid in its food, till in some of the exclusively herbivorous animals, as noted in the above table, it is absent. Clearly, then, the character of the food in different species of animals determines the presence and size of the gall-bladder. In the carnivora the gall-bladder is large, and in the herbivora it is small or altogether absent, while in the omnivora it is intermediate in size. The physiological inference from these facts is that bile does not serve any very important purpose in the pancreatic digestion of starches, for certainly nothing short of the unimportance of bile in the pancreatic digestion of starches would account for the gradual diminution in

size and final loss of the gall-bladder and a consequent inability to regulate the flow of bile according to the needs of pancreatic digestion in animals as they become more and more exclusively herbivorous. This physiological inference corrects the physiological inference made from the Quadrumana, that "bile is of importance in the pancreatic digestion of starches." Evidently this inference was made from incomplete anatomical data. The inference, however, just drawn from the above table, that bile is of little value to pancreatic juice in the digestion of starches, is made stronger by a study of subsequent tables, and is moreover in accord with the physiological conclusion, drawn from laboratory experimentation, and outlined in the preface to this paper, that "bile has little if any favorable action on the diastatic action of pancreatic juice."

In the study of the above table it will be noted that there is a tendency to the separation of the bile and pancreatic ducts in herbivorous animals. In many of these animals the opening of the pancreatic duct is some distance below the bile-duct. This is a fact in comparative anatomy of no little importance. This separation of bile and pancreatic ducts as noted in the last table occasionally occurs in the omnivora, but it never occurs in the carnivora. In these last named animals the bile and pancreatic ducts enter the duodenum by a common opening, except in a few instances where they enter on a common level, thus providing for the mixing of bile and pancreatic juice before or directly after they enter the duodenum. These facts clearly indicate that the preliminary mixing of bile and pancreatic juice is unimportant in the herbivora. It is also clear from a study of all the tables here presented that the union or separation of the bile and pancreatic ducts, as well as the location of the openings of these ducts, with reference to the pylorus, have been determined in different animals by the character of their foodstuffs. The carnivora have a common opening near the pylorus. The herbivora either have a common opening far from the pylorus, or the ducts are separated and the pancreatic opening is far from the pylorus, while the gall-duct may remain near the pylorus. The omnivora present an anatomical arrangement of these ducts which is a compromise between the extremes as found in the carnivora and herbivora. From these facts the physiological inference may be drawn that bile is not necessary to the pancreatic digestion of starches. This inference accords with that above drawn from the comparative anatomy of the gall-bladder in these animals, as well as that drawn from chemical experiments made with rabbits' bile and pancreatic juice as outlined in the preface.

MARSUPIALIA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Dasyure (*Dasyurus viverrinus*)...	2½ cm.	Yes.	2½ cm.	Carn & insect.
Opossum (*Didelphys virginiana*)...	2½ cm.	Yes.	2½ cm.	Carn. & insect.
Bandicoot (*Perameles nasula*).....	2½ cm.	Yes.	2½ cm	Insect. & herb.
Kangaroo (*Macropus giganteus*)...	15 to 25 cm.	Yes.	15 to 25 cm.	Herbivorous.

In this table we have three insectivorous animals and one herbivorous, and the contrast in the arrangement of the bile and pancreatic ducts in these animals is even more striking than in the previous tables. The insectivorous dasyure, opossum, and bandicoot have the common opening of their bile and pancreatic ducts within 2½ centimeters of the pylorus, while the herbivorous kangaroo has the common opening of these ducts from 15 to 25 centimeters below the pylorus. Here again we have emphasized the physiological necessity in the carnivora of mixing the bile and pancreatic juice high up in the duodenum, and the physiological importance in the herbivora of removing the pancreatic duct some distauce from the pylorus.

PINNIPEDIA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Seal (*Phoca vitulina*).....	6½ cm.	Yes.	6½ cm.	Carnivorous.
Sea Bear (*Otaria ursina*).....	5 cm.	Yes.	5 cm.	Carnivorous.

In the two carnivorous animals of this species we have the same arrangement of the bile and pancreatic ducts which we have noted in the carnivorous animals in the previous tables, and the same inferences may be drawn.

SIRENIA.

Species and Name of Animal.	Distance between bile and pancreatic ducts.	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Manatee (*Manatus latirostris*).....	Same level.	Yes.	13 cm.	Herbivorous.
Dugong (*Halicore Dugong*).....	Same level.	Yes.	12 cm.	Herbivorous.

In the two herbivorous animals here presented one notes, in the small gall-bladders, an effort to get rid of this organ, which is of

little use in herbivorous animals, and in the location of the pancreatic duct some distance from the pylorus one notes the arrangement commonly found in herbivora.

RODENTIA.

Species and Name of Animal.	Common opening of bile and pancreatic ducts is from pylorus:	Distance between bile and pancreatic ducts.	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Rabbit (*Lapus cuniculus*).....	.....	30 to 40 cm.	Yes (small).	1¼ cm.	Herbivorous.
Rat (*Mus decumanus*).....	2½ cm.	.....	No.	2½ cm.	Omnivorous.
Beaver (*Castor fiber*).....	.....	45½ cm.	Yes.	7½ cm.	Herbivorous.
Porcupine (*Spingurus prehensilis*)	.....	5⅔ cm.	Yes.	1 cm.	Herbivorous.

The omnivorous rat has no gall-bladder. This, from the point of view presented in this paper, is a decided disadvantage in the pancreatic digestion of fats and proteids. This disadvantage, however, is offset in the rat by an anatomical arrangement which pours the bile and pancreatic juice through a common opening in very close proximity to the pylorus. The rabbit, the beaver, and the porcupine, on the other hand, all have gall-bladders, which, from the argument presented in this paper, they have little use for. The gall-bladders of these animals, however, are small, and will perhaps in time be altogether lost. The beaver and the rabbit, however, emphasize the apparent physiological importance to the herbivora of removing the opening of the pancreatic duct far from the pylorus. The beaver has the distinction of having the distance between the openings of its bile and pancreatic ducts greater than that of any other animal noted in these tables; and the rabbit, with the opening of its pancreatic duct from 30 to 40 centimeters below the opening of the bile-duct, enjoys the distinction of being in this regard second only to the beaver. From these facts it appears that while the physiological laws of food digestion in herbivorous animals may demand that the pancreatic juice be poured into the duodenum some distance below the pylorus, this demand does not carry with it the necessity that the bile-duct should enter at this same low level. The fact, however, that in many herbivora the bile and pancreatic juice are poured through a common opening into the duodenum proves that bile, while it may not increase, certainly does not retard the diastatic action of pancreatic juice; this physiological inference is in accord with that drawn from laboratory study of the diastatic action of rabbits' pancreatic juice as outlined in the preface to this paper.

RUMINANTIA.

Species and Name of Animal.	Common opening of bile and pancreatic ducts is from pylorus:	Distance between bile and pancreatic ducts.	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Ox (*Bos taurus*).....	.....	35 to 50 cm.	Yes.	25 to 30 cm.	Herbivorous.
Goat (*Capra hircus*).....	30 to 40 cm.	.....	Yes.	30 to 40 cm.	Herbivorous.
Pygmy Deer, Malay (*Tragulus Stanleganus*).....	12.2 cm.	.....	Yes.	12.2 cm.	Herbivorous.
Sheep (*Ovis aries*).....	30 to 40 cm.	.....	Yes.	30 to 40 cm.	Herbivorous.
Giraffe (*Camelopardalis Giraffa*).....	25 cm.	.....	No (2 to 1).	25 cm.	Herbivorous.
Camel (*Camelus bactrianus*).....	58 cm.	.....	No.	58 cm.	Herbivorous.
Dromedary (*Camelus dromedarius*).....	28 cm.	.....	No.	28 cm.	Herbivorous.

In this table we have seven herbivorous animals, all of whom have the opening of their pancreatic ducts far below their pylorus. In all of these animals the primitive type has maintained the union between the bile and pancreatic ducts, and placed them together many centimeters below the pylorus. In the ox, however, this union of the bile and pancreatic ducts is lost, and the opening of the pancreatic duct is carried far below that of the bile-duct and the pylorus. These facts offer corroborative testimony to the physiological conclusions drawn from the study of the herbivorous animals in the preceding tables. The uselessness of the gall-bladder to herbivora is here again emphasized by its absence in the giraffe, camel, and dromedary, for surely the disappearance of an organ is proof sufficient that it served no important physiological purpose. In the camel the gall-bladder is still occasionally found. In three dissections made by Dr. J. B. S. Jackson it was absent in two, and present in one.

EDENTATA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Armadillo (*Dasypus gigas*).....	5 cm.	Yes.	5 cm.	Omnivorous.
Small Ant-eater (*Myrmecophaga didactylus*).....	1¾ cm.	Yes.	1¾ cm.	Insectivorous.
Tamandura Ant-eater (*Myrmecophaga tamanduris*).....	5 cm.	Yes.	5 cm.	Insectivorous.
Cape Ant-eater (*Orycteropus capensis*).....	2 cm.	Yes.	2 cm.	Insectivorous.
Two-toed Sloth (*Cholœpus didactylus*).....	.....	No.	10 cm.	Herbivorous.
Three-toed Sloth (*Bradypus tridactylus*).....	.....	Small.	2½ cm.	Herbivorous.

In this table we have two herbivorous animals—one, the two-toed sloth, has no gall-bladder, and the other, the three-toed sloth, has a small gall-bladder. This is in contrast with the insectivorous and omnivorous animals of this species, all of which have gall-bladders. It appears, therefore, not only from this table but from all previous tables, that the gall-bladder is disappearing in herbivorous animals, and that the influence of the primitive type is in great part responsible for the presence of the gall-bladder in these animals.

MONOTREMATA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Duckbill (*Ornithorhynchus paradoxus*)	2 cm.	Large.	2 cm.	Insectivorous.
Australian Hedgehog (*Echidna hystrix*)	3 cm. or same level.	Large.	2 cm.	Insectivorous.

The large gall-bladders and common openings of the bile and pancreatic ducts near the pylorus in these animals support the conclusions previously drawn from the study of the carnivora in the preceding tables.

CETACEA.

Species and Name of Animal.	Common opening of bile and panc. ducts is from pylorus:	Presence of gall-bladder.	Gall-duct opening is distant from pylorus:	Food of animal.
Whale (*Physeter macrocephalus*)	Immediately below	No.	Immediately below	Carnivorous.
Dolphin (*Delphinus delphis*)	Immediately below	No.	Immediately below	Carnivorous.
Porpoise (*Phocæna communis*)	Immediately below	No.	Immediately below	Carnivorous.

In this table we have presented three carnivorous animals, in all of which the gall-bladder is absent. This is a most important exception, since the animals of this species are the only carnivorous animals (presented in these tables) not having gall-bladders. The absence of the gall-bladder in these animals is no doubt a disadvantage to them in food digestion; but nature apparently attempts to right this defect by giving to these animals a common bile and pancreatic duct opening immediately below the pylorus. The absence of gall-bladders in whales is therefore an exception which proves the rules that the physiological laws of food digestion in the car-

nivora demand, first, that they shall have a gall-bladder; secondly, that they shall have a common opening for the bile and pancreatic ducts; thirdly, that this common opening of the bile and pancreatic ducts shall be placed high up in the duodenum close to the pylorus, to provide for the mixing of these juices with the foodstuffs soon after they are discharged from the stomach.

In the whales, however, the physiological laws of food digestion have failed to overcome the influence of the primitive type in determining structure, and have not for this reason been able to develop gall-bladders. These laws, however, failing in this particular have placed the common opening of the bile and pancreatic ducts in these animals almost immediately below the pylorus; in this arrangement apparently making an effort to overcome the disadvantages from which these animals suffer by reason of the absence of gall-bladders.

In conclusion I desire to call attention to certain important facts in the comparative anatomy of the small intestine which do not appear in the above tables, and yet are of considerable physiological importance to the discussion of the questions considered in this paper. These facts relate to the influence which the shape and mobility of the duodenum may have on the rate of passage of foodstuffs along this portion of the alimentary canal. They are as follows:

The duodenum in the carnivora is more closely attached to the head of a fleshy pancreas and has a shorter mesenteric attachment than it has in the herbivora. These facts make peristaltic and other movements less active in the duodenum of the carnivora than in the herbivora, and therefore cause the food to remain longer in the duodenum of the carnivora than in the herbivora. The horseshoe shape of the duodenum in the carnivora may also contribute to this same end. It appears therefore that certain anatomical conditions have been developed in the carnivora which have the effect of so slowing the rate of passage of food through the duodenum that the time of exposure of foodstuffs in the duodenum of these animals to the action of bile and pancreatic juice is greater than in the herbivora.

From these facts one would infer that it is of physiological importance that the fats and proteids should be retarded in their passage through the duodenum in order that they may be longer acted upon by the bile and pancreatic juice while the food yet contains combined acid, and before it reaches the alkaline succus entericus of the jejunum and ileum. This physiological inference

finds support in laboratory experiments which I have previously published, and have outlined in the preface to this paper.

With the assistance of Dr. Frank Southgate, I made the measurements in the following named animals: Chimpanzee, leopard, raccoon, lemur, Capuchin monkey, seal, wildcat, domestic cat, Macaque monkey, opossum, dog, rat, ox, sheep, pig, rabbit, and skunk.

I am also indebted for assistance, in the preparation of the tables, to the following named gentlemen: Dr. Leitz of Frankfort-on-the-Main, Prof. A. Tarenetsky of St. Petersburg, Prof. T. Munk of Berlin, Prof. Pietro Albertoni of Bologna, and Prof. H. C. Chapman of Philadelphia.

I also obtained much valuable information from the lectures of Wm. Henry Flower, published in the *Medical Times and Gazette*, London, 1872, as well as from the works of Owen, Cuvier, and M. Edwards.

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BOOK REVIEWS.

AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. Under the General Editorial Charge of George M. Gould. In Two Volumes: Medicine and Surgery. Price of each volume, $3.00. Philadelphia: W. B. Saunders. 1900.

The publishers of the Year-book have made an excellent change in producing the work in two volumes. The same general arrangement is followed as in previous years, but instead of having a cumbersome volume of 1200 or more pages, we have two small volumes, one of 656 pages and the other of 560. Each volume is paged separately and has its own index, so that it may be purchased separately.

The volume devoted to medicine has fifteen contributors and is divided into the following chapters: general medicine, pediatrics, pathology, nervous and mental diseases, cutaneous medicine and syphilis, materia medica, physiology, medicine, and physiologic chemistry. The longest chapter is that dealing with legal general medicine, and is an excellent *résumé* of the literature of the current year. In pediatrics we are told that the contributions have been of a high standard of excellence, that the subject of diphtheria has less attention devoted to it because the question of the antitoxin treatment has been nearly settled. This department has been directed largely toward hygiene, infant feeding, and the disturbances of the digestive tract. The chapter on pathology opens with an excellent study of the latest contributions to the pathology of tuberculosis. A study of these few pages will convince one that we have not yet learned all that is to be known of the pathogenic relation of the tubercle bacillus. Typhoid fever, likewise, comes in for extended notice, and there is a reproduction of the plates used to illustrate the paper published by T. B. Mallory in the *Journal of Experimental Medicine*. The field of nervous and mental diseases is well covered, the author taking two and one-half pages to tell us of the tendency of investigation in this department for the last year. We are informed that the toe-sign is of significance; there is a reference to the important contributions of Osler on meningitis; the treatment of epilepsy by the removal of the sympathetic ganglia has been proven to be practically valueless. In medicine especial attention has been paid to autointoxication. The relation of syphilis to general paralysis is still a bone of bitter contention. In the department of dermatology there is a reproduction of the plates illustrating Bie's article on the value of light in the treatment of lupus. Wyatt Johnson calls attention to the Cruppe law passed by the French Chamber of Deputies which allows a suspected person to choose an expert to investigate the case in his behalf at the expense of the government. The expert must be selected from a list revised annually by the courts.

The surgical volume is somewhat smaller than the medical. It is divided into eight chapters: general surgery, obstetrics, gynecology, orthopedics, ophthalmology, otology, diseases of the nose and larynx, and anatomy. The most important and longest chapter is that dealing with general surgery, under the charge of W. W. Keen and J. C. Da Costa. Obstetrics and gynecology are represented by 160 pages. The chapter on gynecology is illustrated by the beautiful cuts of Kelly on perineorrhaphy, which appeared in the *Johns Hopkins Hospital Bulletin*.

THE PRINCIPLES OF TREATMENT AND THEIR APPLICATIONS IN PRACTICAL MEDICINE. By J. Mitchell Bruce, M.D. Adapted to the United States Pharmacopœia by E. Quin Thornton. Price, $3.75. Philadelphia and New York: Lea Brothers & Co. 1900.

The writer finds an excuse for writing a book upon the principles of treatment, as he has come to realize the difficulty which educated students feel when they are called upon to show an intelligent acquaintance with therapeutics. They may write a prescription with little trouble, but as a rule they cannot give a rational account of the principles upon which they have planned it. This leads to a routine method of prescribing. In teaching, the author has always directed the attention of students to the object for which treatment is undertaken. After this is clearly stated the medicinal and non-medicinal natures which effect the desired end are discussed. The present work is planned on the same lines.

In the introduction the author discusses indications for treatment which he thinks are found in rational application of etiology, pathology, and the clinical relations of disease. Chapter II discusses the principles of treatment founded on etiology. This includes the microorganisms, namely, parasites, poisons, unstable food, traumatisms, cold, heat, and methods of natural resistance.

The principles of treatment founded on pathology are ably discussed. This includes a study of immunity and repair, inflammation, degeneration, hypertrophy, atrophy, hemorrhage, congestion, and ends with a description of the methods of natural recovery and the indications to be drawn from them. There is an extended description of the principles of treatment founded on the clinical character of disease.

Part II, comprising nearly one-half of the volume, is taken up with the illustrations of the principles of treatment furnished by individual diseases and conditions as met with in practice.

It is difficult to classify this book, as it can hardly be called a work on practice, nor yet one on therapeutics. It is devoted to a discussion of the principles of therapeutics in the first half; in the latter part we have a description of the individual diseases and their treatment which does not differ from the average work on therapeutics. There is no close connection between the two parts. That dealing with the discussion of the general principles is a very valuable addition to the literature, as it is an attempt, in the main successful, to bridge that ever-widening chasm between pathology and clinical medicine on the one hand, and the application of remedies to the cure of the disease upon the other.

DISEASES OF WOMEN. A Treatise on the Principles and Practice of Gynecology. By E. C. Dudley, A.M., M.D. Second Edition, Revised and Enlarged. Price, $5.00. Philadelphia and New York: Lea Brothers & Co. 1899.

Within a year of the appearance of the first edition a second is called for. The same plan is preserved as when the work was first issued, an earnest effort having been made to avoid what is speculative and theoretical and to give that which would be of the greatest immediate help to the student and practitioner. A casual examination shows that the second edition is a marked improvement over the first. Four new chapters have been added—three upon the chief disorders of menstruation and one upon sterility. The work has been enlarged by

the addition of seventy-eight pages of reading matter, thirty-one illustrations, and six full-page plates. The arrangement of the text so far as possible has been based upon pathological and etiological sequence, as it was thought in this way that the student would more readily recognize the functional unity of the reproductive organs.

The former edition was carefully reviewed in these pages, and regarding the work as a whole we can only express the same opinion that was then given, namely, that from a practical standpoint there is no better work on operative gynecology. The second edition is in many respects an improvement over the first.

Die Pathologischen Beckenformen. Von Prof. Dr. Carl Brens und Prof. Dr. Alexander Kolisko. I Band, I Thiel. Leipzig und Vienna: Franz Deuticke. 1900.

This is the first part of the first volume of what is intended to be an exhaustive work upon the pathology, anatomy, and anomalies of the pelvis and its bones. In addition there will be extended consideration of the pathogenic conditions underlying alterations in these structures. Until the present there has been no exhaustive work upon this subject, although certain departments have been extensively studied in the periodical medical literature. This work, when completed, will be composed of three volumes, each to be made up of two or three parts. The first volume will consider the disturbances in the embryological development of the pelvis and the growth of abnormal pelves. The second volume will consider the diseases of the pelvis and its joints, with their resulting changes of form. Volume III will contain an account of abnormal pelves due to changes in the vertebræ or lower extremities, as well as those depending upon abnormalities of the central nervous system.

The part which is now issued contains 366 pages, in which are found 116 figures, 110 of which are original. The first part is taken up with the study of the pelvis in its general aspect and a classification of the subject.

A Text-book of Embryology. For the Use of Students of Medicine. By John Clement Heisler, M.D. Price, $2.50. Philadelphia: W. B. Saunders. 1899.

In the preparation of this work it is evident that the author has aimed at the production of a text-book which would give the main facts of embryology that have a practical bearing upon the study of anatomy. It is generally regarded at the present time that some knowledge of this important subject is necessary to the full comprehension of anatomical structure and of the function of parts. In the present work he has aimed to give such a description as is intelligible, and which would enable a student to understand the development of the different organs; at the same time the immense mass of detail essential to the specialist in this line of work is omitted. It is possible, by careful study of this book, to acquire such a working knowledge of embryology as is necessary to the understanding of the medical sciences.

The book is handsomely illustrated, containing 190 figures, 26 of them in colors. It is the best English work of moderate size upon embryology that has appeared, and is suitable for the needs of medical students.

EDITORIAL COMMENT.

THE PHTHISICAL INSANE.

Accurate figures are not obtainable as to the number of people who die of consumption. An approximate estimate places the figure at about one-seventh of the total death-rate. This would apply to the country as a whole, and is found to be an approximately accurate figure for France. A study of statistics in that country shows a very marked disproportion in the prevalence of phthisis in different parts and also in different cities, and even in different parts of the same city—some present a death-rate two or even three times that of others.

The death-rate in institutions for the insane from phthisis has been something enormous, many institutions presenting as high as one-third of the entire death-rate due to phthisis, or in which advanced tubercular disease of the lung is found associated with other conditions at the autopsy. Recently, in both England and this country, there has been an effort on the part of asylum authorities to extend to the inmates the benefit of open-air treatment, which has proven so successful in the treatment of the phthisical outside of institutions.

In a recent article on the isolation and open-air treatment of the phthisical insane, David Blair (*Journal of Mental Science*, April, 1900) gives notes of seventy-four cases treated. In the County Asylum, Lancaster, about four years ago, an isolation hospital for infectious diseases was completed. This hospital largely remained tenantless until it was determined to utilize it in the treatment of the phthisical. It had two wings containing twelve beds each, with a south exposure, and was well sheltered on the north, east, and west. The hospital was equipped with a steam sterilizer, special cooking arrangements, and rooms for attendants.

The writer speaks of the difficulty of early diagnosis of tuberculosis in the insane. The tubercle bacillus cannot be found in many instances, and he doubts the advisability of resorting to the tuberculin test in cases where there is hope of improvement. The physical signs are often concealed by mental symptoms, and he regards the weighing machine and the thermometer as the most reliable aids in detecting phthisis in the insane. He points out that an isolation hospital for the phthisical insane must be a well-equipped asylum as

well as a hospital. It should contain at least one isolation room to each eight beds, and the utmost precaution should be taken in disinfection and cleanliness. The general principles aimed at in the treatment of the phthisical insane are the same as are followed in those not mentally afflicted. It should include exposure to the fresh air as much as possible; an abundant dietary, limited only by the assimilative powers of the patient; in certain cases outdoor exercise, regulated according to the patient's streugth; and careful medical supervision over every detail of the patient's life. Some of the windows of the dormitories are kept open all the year, and the patients, even in winter, are allowed to sit outside in shelters protecting them from the wind. A very liberal dietary is employed, which includes six feedings. Bread and milk, tea, potatoes, beef, meat, and fish are given, together with cod-liver oil in some form. Few drugs are employed, but care is taken that whatever is done the digestion shall not be disturbed, because, if there is no increase in weight, the prognosis is invariably grave.

The writer gives seventy-four cases, in age ranging from twenty to sixty-two, of which only three had acquired phthisis before admission to the asylum. Twenty-one of the seventy-four cases, or nearly 28 per cent, were epileptics, while this class in the asylum only constitutes about nine per cent of the population; 36.5 per cent were melancholiacs. Melancholia was found to exist in 40 per cent of the total insane. Only seventeen were maniacs, and this form of insanity represents about 30 per cent of the entire population. It will thus be seen that the epileptics furnished by far the largest proportion of phthisis, the melancholiacs next, and those affected with mania the fewest. In twenty-three out of the seventy-four cases the disease was effectually checked and their condition much improved. Practically all suspected cases sent to the isolation hospital were returned to the general wards cured. Since the opening of the isolation hospital the death-rate from phthisis in the asylum has fallen one-half.

THE INJURIES OF NERVES DUE TO FRACTURES AND DISLOCATIONS.

In former numbers of MEDICINE we have sounded a note of warning on the relation of nerve injury to fractures and dislocations in their relation to malpractice suits. The shoulder dislocations have been a fruitful source of such litigation. The usual history of such cases is a simple dislocation of the shoulder, followed by pain

and swelling either before or after reduction. The surgeon informs the patient that an early recovery is to be looked for, with perfect usefulness of the arm. After the pain and swelling subside, the patient is much surprised at an increasing inability to use the hand and the forearm, and soon well marked signs of muscular atrophy develop. Accompanying the dislocation there is a contusion of the brachial plexus which has set up a peripheral neuritis. The prognosis in these cases is usually favorable, but the early recovery which was predicted by the physician does not take place, and the patient, after months of invalidism, comes to think that the physician who could have been so incorrect in his prognosis was probably deficient in the matter of treatment, and there follows a malpractice suit.

The possibility of nerve injury should always be in the mind of the practitioner in all cases of fracture and dislocation, and, indeed, in severe contusions of a part. In some cases the paralysis comes on immediately after an accident, as a result of the violence and the direct compression of the nerve. These cases cause little difficulty, as the conditions are easily recognized. In other cases the paralysis is not immediate, or there may be only such numbness and tingling as commonly occurs after injury. The paralytic symptoms are due to neuritis, which comes on several days after injury. Before giving a definite prognosis in case of fracture or dislocation, as to the time in which a person would recover the usefulness of the limb, it is always well to study the nerve supply carefully. To do this several days must have elapsed from the receipt of the injury, and there must be a careful testing of sensation and motion. If the condition of the part is such that voluntary motion is impossible owing to inflammation, or the possibility of disturbing broken bones, then it is well to use a battery to learn if there is any alteration in the electrical response of the muscles of the part.

C. G. Cumston, in *Pediatrics* of April 1, 1900, describes a very interesting case of injury to a nerve following fracture. It is one which would have furnished an admirable foundation for a malpractice suit. The fracture was of the left humerus, just above the condyles. It was reduced and a splint applied. After the dressings were removed the patient noticed that the hand was practically powerless. Two months after the fracture it was noted that the median nerve was completely paralyzed. There was a diminution of the sensibility in the area supplied by the median. An incision was made, exposing the median nerve, which was thinner than normal and found to run over a sharp projection of bone, which was chiseled

away. Five weeks later sensation returned, and eleven weeks after the operation the motor function of the arm was almost wholly regained.

It does not require emphasis to show the relation of an injury such as that above described to suits for malpractice.

"AMERICAN NERVOUSNESS."

Since the time of Beard neurasthenia has been looked upon as an American disease. Indeed, Beard, to whom the world is indebted for the clinical conception of neurasthenia as it is held to-day, used the word as a synonym for "American nervousness." Clifford Allbutt says in his recent System of Medicine that it has been customary to look upon this disease as a special product of high civilization, but its prevalence throughout the world is an indication that it is no modern innovation. The conception of Beard, therefore, has widened itself into a disease coextensive with the human race, and probably as old as humanity. There was warrant for the belief of Beard that the disease was peculiar to Americans, and was based solely upon the fact that the symptoms which he recognized were found in Americans, because these were the only patients under his observation. As there was little or no reference to such a conception in foreign literature, he came to the conclusion that the disease was very infrequent outside of this country. Later studies have shown the world-wide parallels of the malady and have confirmed the classical descriptions of Beard, which apply equally to civilized and uncivilized and to races of the most diverse origin.

ABSTRACTS.

MEDICINE.

Polioencephalomyelitis Presenting the Clinical Picture of Landry's Paralysis.—

D. H. Sherman and W. G. Spiller, in the *Philadelphia Medical Journal* of March 31, 1900, describe the case of a medical student aged 21, who one week before the beginning of his illness received a dissecting wound which had healed promptly without signs of local infection. The illness began with symptoms of general weakness and frontal headache, which continued for a couple of days, followed by vomiting. The pulse was 64, the temperature 100.6°. The following morning, after a restless night, the pulse was somewhat increased, but the temperature remained the same. On the second day of the illness he was taken to the hospital, where he complained of soreness over the diaphragm and some weakness in the legs. He could still walk, but it was with considerable difficulty. The following morning there was marked difficulty in respiration. He was able to assist breathing by pulling with his arms on the head of the iron bedstead. The intellect was clear and speech was not interfered with. There was no facial paralysis.

Examination showed the thoracic and abdominal organs to be normal. All reflexes from the shoulder down were absent. The electrical reactions were intact. The legs could not be moved, but the toes could be extended and relaxed somewhat, and the quadriceps extensor muscle had some power. The bladder was emptied with the catheter, but there was perfect control of the rectum. A striking peculiarity of the case was the fact that the respiratory muscles were paralyzed before the arms. After the impairment of the respiratory muscles the patient performed artificial respiration for himself for six hours, when it was undertaken by others. Tracheotomy was performed and artificial breathing continued. The patient died twenty-two hours after the dyspnea developed.

The nervous system was studied by Spiller, who found intense cellular infiltration throughout the gray matter of the anterior horns of the spinal cord. This same infiltration was present in the posterior horns, but much less marked. Similar infiltration was found in the pia and in the form of perivascular foci within the white columns. The vessels everywhere were much distended with red

corpuscles. The motor nerve cells of the spinal cord were greatly degenerated. The anterior spinal roots were normal. No hemorrhages were found within the spinal cord, but some recent ones were found within the spinal meninges. These changes were found throughout the brain and cord, the process being essentially a polioencephalomyelitis, although the white matter was not intact. In the posterior portions of the cord, external to the lumbar roots, there were some changes presented in the white fibers. The myelin sheaths were seen to be more or less broken up. These appearances the writer has seen in other cords, and he regards them as changes which appear shortly before or shortly after death. His conclusions are that Landry's paralysis is due to a poliomyelitis and is an infectious disease resulting from invasion by different forms of bacteria. Meningitis is a not infrequent complication.

Diagnosis of Tuberculosis of the Urinary System.—

W. W. Babcock, in the *International Medical Magazine* for March, 1900, says that the staining of sputum for the tubercle bacilli is a helpful and comparatively simple process. The same technique has been employed in searching for the tubercle bacillus in urine, which has been for the most part unsuccessful. It is this failure in the method employed which has led to the discarding of the search for the tubercle bacillus, as it was so often found to be absent in cases where post-mortem examination showed an unquestioned tubercular process. The bacillus in sputum is surrounded by a comparatively small quantity of tenacious mucus. When spread upon glass and evaporated, this adheres firmly to the slide, fixing the tubercle bacilli in position, and they are not readily washed away. When the tubercle bacillus occurs in urine, the conditions are very different; either there is a large amount of sediment which obscures the bacilli, or even in cases where there is mucus, it is associated with crystalline substances which are precipitated upon the glass and which prevent the mucus from adhering to its surface. The statement often found in works upon physical diagnosis, that the same technique is to be employed in staining urinary sediment for the tubercle bacillus as is used with the sputum, is an error and a frequent cause of failure. When collecting urine for examination, the utmost care should be employed to avoid contamination with the smegma bacillus, which closely resembles the tubercle bacillus in form and staining reaction. In the majority of cases it is better to obtain the urine by a catheter, and in such cases, if a small particle of mucus or caseous matter is found, this can be transferred directly

to a slide, spread, dried, and stained in the usual way. If the bacillus is sought for in the urine, it is necessary to have a good centrifuge. A considerable amount should be employed, the clear part decanted off, and the collected sediments added together. The collected sediments are finally precipitated and cleared with the following solution:

Borax	4 parts.
Boric acid	4 parts.
Distilled water	100 parts.

This is again centrifugalized, and if the remaining precipitate is small, it is transferred to a slide for staining. If the remaining precipitate is large, the phosphates may be dissolved by adding a drop or two of acetic acid. Urates may be gotten rid of by washing the precipitate with warm distilled water. Muco-pus is dissolved by adding a strong solution of caustic potash. The precipitate finally remaining is stained by one of the methods used in staining sputum. Care should be taken to use a decolorizing agent strong enough to remove the stain from any associated smegma bacillus. Such a decolorizing agent is found in:

Hydrochloric acid	3 parts.
Absolute alcohol	97 parts.

Hysterical Anesthesia.—

J. T. Eskridge, in the *Journal of the American Medical Association* of March 10, 1900, describes the diagnosis of traumatic injuries of the central nervous system. So much confusion in the description of these cases has occurred in reference to the hysterical anesthesia that we reproduce the excellent remarks of Eskridge upon this subject.

In hemianesthesia the loss of sensation is often profound, extending from the crown of the head to the sole of the foot—this is rare in organic disease, but does occur in certain lesions.

The reflex action of the skin over the anesthetic areas is normal or nearly so—not so in organic disease.

The pupils dilate when the skin of the neck of the anesthetic side is irritated—in organic disease with anesthesia of the skin over the neck the pupils do not dilate when the skin is irritated.

The fingers of the anesthetic hand can still be used without the aid of sight in the performance of fine and dexterous movements—if the hand is anesthetic from an organic lesion delicate movements of the fingers cannot be accomplished without the aid of sight.

When the arm or leg is affected the anesthesia may cease abruptly at the wrist or ankle, at the elbow or knee, at the hip or shoulder, or between the joints. This is known by the names of the glove and stocking anesthesia—this is only found in a few organic lesions.

The ovarian tenderness is often greater on the anesthetic side. The other tender spots on this side persist, notwithstanding that analgesia over all other portions of this side is profound — this is contrary to what we find in organic disease of the nervous system.

The loss of sensation may extend up to or just beyond the median line in front, but may not reach the median line in the back. In some cases the loss of sensation does not extend up to the median line either anteriorly or posteriorly—in organic disease the anesthesia follows the course of the distribution of the nerve supply.

The anesthesia may come on suddenly, as from traumatism; it may develop or increase after a hysterical paroxysm; it may increase during the examination, especially if a suggestion to that effect is made; and it often increases at the menstrual period; it is frequently changeable from day to day, and may be transferred from one side to the other, especially by the use of suggestion or by the application of magnets—the opposite holds good in anesthesia from organic lesions.

The anesthetic area ends abruptly—the same thing is found in some cases of syringomyelia.

In hemianesthesia there frequently is a condition of "crossed amblyopia," the eye most affected being on the side on which sensation is lost. He has never met with this combination of symptoms from organic disease of the brain.

Pneumonia from a Public Health Standpoint.—

Arthur Newsholm, in the *Practitioner* for January, 1900, gives an exceedingly interesting study of pneumonia in its statistical relations. He finds difficulty in estimating the mortality from pneumonia, due to the fact that the disease is frequently a complicating factor in other disorders, such as influenza, whooping-cough, typhoid, etc. In preparing tables as to the frequency of the disease, he thinks such cases should be excluded and only those counted in which the disease is primary. In the decade 1871 to 1880, one death out of twenty-one was caused by pneumonia; in the following decade, 1881 to 1890, it caused one death out of eighteen.

The higher proportion in the second decade is in part due to the influenza of 1890. The mortality from pneumonia is greatest in early life and in old people. The tables show high mortality after 55 years of age. As a cause of mortality in those under five years it is only surpassed by bronchitis and the diarrheal diseases. Sex plays an important rôle in the mortality; in those under five years there is a marked preponderance of males. This difference decreases until about the twentieth year, when the proportion of the sexes is nearly equal. After this period there is a marked increase in the number of males as compared with the females. Taking all ages together, and estimating the mortality upon a single year, it was found that out of a million there were 1340 males and 917 females dying of this disease.

The season influences the mortality from this disease. The largest number of cases are in the months from February to May, February being the maximum month for Philadelphia and Bombay, March for Munich and for Paris, April for Frankfort, Berlin, and Vienna, May for Stockholm and Copenhagen. The smallest number of cases is from July to September. The London deaths from pneumonia rise to a maximum in December and fall to a minimum in August. It is a cold weather disease; soil and moisture do not seem to influence its development. Natives of the tropics, especially negroes, are especially subject to it. The death-rate of the negro population from this disease in Washington, D. C., was 252 per cent in excess of the white population at the same age. A study of the relation of occupation shows that dust, alcoholism, and exposure are important factors in its production.

A large number of epidemics of pneumonia have been described. Under the term infectious pneumonia the writer mentions a number of cases in which it would seem that the disorder was distinctly contagious. One of these was that of a clergyman who was attended by a nurse for acute pneumonia; at the end of a week she contracted the same disease. The clergyman's sister, who then took the place of the nurse, was in her turn seized with pneumonia. A brother of the clergyman next came to help, and he was laid up with the same disease.

A Brief History of the Plague Epidemics in Hong Kong, in the Years 1894, 1896, 1898, and 1899.—

J. C. Perry, in the *Public Health Reports* of February 23, 1900, gives an interesting *résumé* of the plague epidemic which has recently devastated Hong Kong. The disease seems to have been

imported from Canton, where it had been prevalent for three or four months before it appeared in Hong Kong. The first cases developed in May, 1894, this epidemic subsiding in September of that year. It was noted that the cases increased during the rainy season, which the writer attributes to the fact that the Chinese coolies sleep indoors when the weather is wet, their custom being to sleep on the streets during pleasant warm weather.

The conditions were all favorable for an epidemic of the plague among the Chinese. There are 6538 Chinese houses in Hong Kong, with an estimated population of 23.5 persons for each dwelling. The difficulty of dealing with the plague was greatly enhanced by the unsanitary conditions and the filth of the Chinese. Many lived in cellars in which no sunshine entered nor ventilation existed, and they were surrounded by filth of every description. A table of admissions to government hospitals during 1894 shows that in May there were a total of 210 cases with 172 deaths. These fell in October of that year to one case and one death. During that time there were admitted to Chinese hospitals 2455.

Of some interest is the account of those who acquired the disease, and of the mortality in reference to nationality. The record is fairly accurate of 2679 cases. Of these 11 were Europeans and 49 other nationalities; 2619 were Chinese. Of the 11 Europeans, 2 died, a mortality of 18.2 per cent; while of the Chinese, 2447 died, a mortality of 93.4 per cent. Of the 49 other nationalities, the numbers are two small to predicate anything regarding race and mortality.

There was a reinfection of Hong Kong from Canton in 1896, though every effort had been made to improve the sanitary conditions. The epidemic began in January and lasted until November. The total number of cases was 1204, with a mortality of 89.5 per cent. It was noted in this, as in other epidemics, that in the beginning the disease was more severe and the mortality was higher.

In 1898, notwithstanding that a new and modern drainage and sewerage system had been installed, and with increased efforts at isolation and disinfection, there were 1315 cases.

In January, 1899, the plague was again reported, but no new cases were observed until March. From that time there was a steady increase until the maximum of 142 cases a week was reported in July. From that time the number of cases diminished, until in December the disease was at an end. In this latter epidemic 1480 cases were reported with 1423 deaths.

Diagnosis of Gonorrhea in Women.—

John G. Clark, in the *American Journal of the Medical Sciences* for April, 1900, gives a critical summary of the recent literature on gonorrhea in women. Regarding diagnosis, he says that the determining of this infection in women is much more difficult than in men, chiefly because a slight discharge may be considered more or less normal in women. The mere fact of such a discharge in the male is strong presumptive evidence of its specific origin. The certain diagnosis of gonorrhea in women depends very largely upon the demonstration of the gonococcus in the urethra. A profuse purulent urethral discharge is quite as diagnostic as it is in men, but this acute urethritis is comparatively fleeting in character, and the disease may persist months and even years after all these symptoms have disappeared. After the disease has become chronic, it may be possible to express a small quantity of purulent matter from the urethra or from the ducts of Bartholin's glands. A profuse yellowish discharge from the cervix is presumptive evidence in favor of this disease, but an opinion cannot be conclusively given unless the gonococcus is detected in the secretions.

In securing the pus for this examination, the greatest precaution should be observed not to have it contaminated by other organisms. The vaginal discharge for this purpose is almost valueless, as it has so many germs. That from the urethra, Bartholin's duct, or other concealed passages gives the best results. The cervix should always be examined, the secretions being obtained while in the Sims posture, which permits of complete exposure of the cervix.

Methylene blue is employed in staining. The secretion is spread on a cover-glass or slide; it is then dried by passing it a few times over the flame of an alcohol lamp or gas-burner. The staining fluid is then dropped upon the slide and allowed to remain from one-half to one minute. It is then carefully washed in running water and dried with bibulous paper. To be certain of the diagnosis, the gonococcus must be found inside the pus cells. One examination is not sufficient to confirm negative results; the writer mentions one case in which twelve examinations were made, on different days, before the gonococci were found.

Family Periodical Paralysis.—

J. J. Putnam, in the *American Journal of the Medical Sciences* for February, 1900, reports a case of this interesting and rare disease and discusses at length several theories as to how this striking symptom is produced. His patient was a young man, aged 24

years, of vigorous muscular development, but of a nervous temperament. No other case of periodic palsy has occurred in the family. The first attack in this patient took place when he was 14 years old. Since then severe seizures have occurred at intervals varying from one to seven months, with lighter attacks interspersed between them. The attacks show a marked predilection for certain days in the week, occurring most frequently on Sunday or Monday. The onset is usually rapid, the patient going to bed in his usual health and awaking in the morning unable to move hand or foot. He sometimes shows irritability a day or so before the attack comes on. In the more severe attacks the paralysis is complete, and the patient can move only a few muscles except those of the lips and eyes. Sensibility remains intact, both to contact, temperature, and pain, and the knowledge of the position of the limbs is not interfered with. The attacks vary in length from a few hours to two or three days. After the attack subsides, several days or a week may elapse before the muscles regain full power. During the first few hours of the attack the patient falls asleep, seems very tired, and during the attack usually takes very little food or drink. There is a definite order in the development of the paralysis, dorsal flexion of the foot being the first symptom. The next difficulty is that in rising from a chair and extending the leg at the knee. At this stage he can sometimes walk about by exercising care to keep the legs stiff at the knees. No exciting cause of the attacks can be found, with the possible exception of overloading the stomach. Most of the attacks come on during the night and disappear by the following morning.

Cystitis Due to Typhoid Bacillus.—

Thomas R. Brown, in the *Medical Record* of March 10, 1900, reports the case of a woman who was operated upon January 20, 1899, and a large myomatous uterus removed. Thirty-five years before operation she had had an attack of typhoid fever. Since that time there had been no illness suggesting a reinfection with typhoid, nor were there manifestations of microorganisms in bone lesions or osteomyelitic abscesses. In the operation for the removal of the uterus there was considerable handling of the bladder. The urine examined on the day of operation was normal, of acid reaction, of 1.021 specific gravity. The operation was followed by normal temperature, which continued until the eighth day, when there was a slight rise. This was accompanied by intense pain in the bladder, and an examination of the urine showed a sediment of

pus with considerable albumin. Reaction was acid. There were the subjective symptoms of acute cystitis—tenesmus, frequent micturition, vesical pain, etc. A specimen of the urine was obtained under strict aseptic precautions, which upon examination was found to give a pure culture of the typhoid bacillus.

The author discusses the mode of infection in this case, and while he admits that the typhoid bacillus may be left in the body for a considerable period, he is disposed to think that its retention in the present instance for a period of thirty-five years is excluded by the history of the case. He points out that on the day of operation the examination of the urine showed it to be normal; hence there was no cystitis. He thinks that the typhoid bacillus was introduced from without, probably by a catheter, the development of the infection being favored by the handling which the bladder received at the time of the operation.

Amebic Dysentery.—

I. B. Diamond, in the *Philadelphia Medical Journal* of April 7, 1900, has an article dealing with the report of an autopsy and the microscopic study of a case in which death followed amebic dysentery, and a clinical report of four other cases. The cases show the frequency with which this affection is overlooked, especially in the South. From the standpoint of treatment early recognition is essential. Cases treated early do not become chronic. In every patient who has lived in a tropical or subtropical climate, with persistent dysentery, this disease should be suspected. A microscopic examination of the stools is essential in the diagnosis of the condition, and the peculiar microorganisms may not be recognized if they are in a quiescent state. Under these circumstances a staining solution composed of a one-half of one-per-cent watery solution of toluidin blue may be employed. By this method the organism is easily differentiated from other structures. In collecting the discharges for examination, mixture with urine should be avoided, as the latter invariably kills the amebæ. Stringy mucus, if found in the feces, frequently contains the organisms in considerable numbers.

Care in Physical Diagnosis of the Chest.—

William Porter, in the *North American Journal of Diagnosis and Practice* for February, 1900, urges greater care in the physical examination of the chest, and emphasizes what he considers important, but too often overlooked, methods of investigation. These

signs obtain additional importance from the fact that they point to disease in its incipiency, when treatment offers the greater hope of improvement. In making an examination of the chest it should always be bared, a precaution frequently overlooked. The inspection of the shape and movements of the chest should never be neglected. Mensuration may be made an important part of the investigation if rightly employed. The usual method of measuring with a tape he regards as of little value, but the measurement of the anteroposterior movement by calipers is of some value. A comparison of the resonance of corresponding points should always be made. He especially calls attention to two early physical signs that are easily overlooked, and yet are important, as they are frequently the earliest signs of disease. One is the prolonged respiratory murmur due to a loss of elasticity of the lung. This with enfeebled respiratory murmurs should always excite suspicion, even in the absence of crepitation. Another chest sign of importance is the conveyed heart sounds. He uses this term in contradistinction to transmitted sounds, as the latter is generally applied to sounds which are heard through more or less solid media.

Etiology of Tabes.—

D. F. Wolfstein, in the *Cincinnati Lancet-Clinic* of February 24, 1900, gives an exhaustive study of the literature relative to the causation of tabes. His conclusions are that there is no direct relationship of cause and effect between syphilis and tabes. Lues is one of a group of varying or exciting causes. It is associated with tabes in a larger proportion of cases than any other single condition. It is probable that there is some common cause of tissue inferiority, and that the underlying factors are congenital predisposition and functional exhaustion. There is no practical therapeutic value in upholding the theory of syphilis, and its general acceptance should be relinquished on the ground that it is not proven.

In the discussion Phillip Zenner said that the causes of tabes must of necessity be difficult to study, as the disease manifests itself so long after the causes which produced it have been in operation. He believes that syphilis insontium is much more common than is generally supposed, and he in common with most other neurologists believes that lues is a most important factor in the production of the disease.

F. W. Langdon said he did not believe that tabes is always caused by syphilis, but that it is an important antecedent in a great many instances.

Centrifugal Analysis of Urine.—

C. W. Purdy (*Journal of the American Medical Association*, Feb. 10, 1900) says that urinary analysis is of immense importance from a practical standpoint. It at once indicates disturbances of metabolism, and valuable knowledge is obtained of the progress of acute diseases. It is therefore of the utmost importance that the methods attainable in laboratory work should be of more general use to the busy practitioner. After five years of effort the author has worked out a method of estimating the chlorides and sulphates and phosphates in the urine by sedimentation. When he first recommended this he considered its results approximate only, but since then he has found that by the tables now employed he is able to reach results that are comparable to titration, weighing, etc., as is carried out in the laboratory.

In brief, the method is as follows: A motor is employed carrying four tubes. The respective reagents are added in proper proportions, allowed to stand for three minutes, and then revolved in a centrifuge which is operated at exactly twelve hundred revolutions a minute for three minutes. The tubes are then removed and the percentage of precipitates is read off on the scale.

Traumatic Pneumonia.—

A. Sonques, in *La Presse Médicale* of March 3, 1900, gives a study of a certain variety of pneumonia known as *pneumonie contusive*. By this he understands a pneumonia developing after a blow on the walls of the chest, in which there is no solution of continuity in the lung tissue such as would come from a fractured rib or the penetration of a foreign body. He has studied forty-nine cases of this type and finds that the pneumonia is usually of the bronchial variety. Rarely is it croupous, and still less frequently interstitial. The most frequent form is pleuropneumonia. He studies the manner in which this form of pneumonia is produced and the rôle traumatism plays in its development. He comes to no definite conclusions on this point, but claims that the number of cases so far recorded establish the etiological relation of traumatism of the chest and the subsequent development of pneumonia.

Ocular Trouble Among Negroes.—

David De Beck, in the *Cincinnati Lancet-Clinic* of January 13, 1900, gives an interesting study of the comparative frequency of ocular troubles among negroes and the white race. Condyloma of the iris is relatively more common among luetic colored patients than among

white ones. Tubercle of the iris he has never observed in a negro, nor has he been able to find a recorded instance in the literature. This is the more surprising when we consider the notorious susceptibility of colored people to general tuberculosis. Irido-choroiditis is relatively more common in colored people. He has never observed a case of acute glaucoma in a negro. Congenital anomalies are also exceedingly rare in full-blooded negroes. Refraction of the negro's eye is almost invariably hypermetropic to a greater or less degree. He includes in the table only the cases examined under atropine. Emmetropia, using that term to include eyes presenting no greater defect than .25 D., he found extremely rare. Myopia he has never seen in a full-blooded negro, the three cases which he has observed being all in mulattoes or whiter. Astigmatism in anything beyond the lowest degree seems to be comparatively rare.

The Clinical Uses of the Sphygmograph.—

R. Van Santvoord, in the *Medical Record* of February 24, 1900, gives an analysis of the results obtained by him in the use of Dudgen's sphygmograph during the last fifteen years. The writer thinks that the sphygmograph is a valuable instrument in the examination of patients. It is, however, subject to some errors. The chief one is the improper adjustment of the pad over the artery and also the amount of pressure employed upon the spring. There is no guide to the amount of pressure which is to be used; it must be varied in individual cases, and that amount of pressure which brings out the maximum amplitude in the tracing is the one to employ. Occasionally arteries are so small or so deeply placed that no satisfactory tracing can be obtained. This is also true when the ventricular action is very feeble and the force of the pulse is so reduced that a tracing with distinct characters cannot be obtained. In spite of these limitations and sources of error, there is a constant recurrence of certain types whose readings harmonize with the clinical records and the post-mortem findings.

The Clinical Thermometer as a Germ Carrier.—

W. L. Conklin, in the *Buffalo Medical Journal* for February, 1900, has made a practical study of the thermometer as a carrier of infection. He gives a comparative diagram of the size of bacteria and of certain depressions found in the bulb of the thermometer. The bacillus of tuberculosis and that of diphtheria in this diagram is magnified 6000 times, while a graduation mark of the thermometer is shown magnified 1200 times. A study of the comparative area

shown by the germs shows that one of the graduation marks of the thermometer may contain as many as 280,000 tubercle bacilli. Pits in the apparently smooth bulb of the thermometer were found which could easily contain thousands of bacilli. He believes that the thermometer should at all times be sterile, and this, he finds, can readily be reached by filling the rubber case with a 1-to-500 or 1-to-250 bichloride solution. As a certain amount of the solution is removed each time the thermometer is used, it is necessary to renew it every two or three days.

An Experimental Study of the Function of the Thyroid.—

I. Levin, in the *Medical Record* of February 3, 1900, says that the effect of removal of the thyroid and the phenomenon of myxedema are well understood, yet the exact mechanism as to how these conditions are brought about has not been worked out. His experiments were conducted upon rabbits, which are found to be very much less susceptible to the removal of the thyroid gland than are dogs or the carnivora generally. It was found that rabbits survive the removal of the thyroid indefinitely. The accumulation of mucin in the tissues in myxedema led him to experiment with this substance on animals. He found in dogs that mucin caused a marked fall of the blood-pressure. The same was true of rabbits, but the injection of this substance hypodermically with rabbits destroyed those animals in whom the thyroid had been removed; those with intact thyroid eliminated the mucin, and the animals survived. The conclusion to be drawn from his experiments is that the thyroid has the power of removing mucin from the blood.

Gastrointestinal Hemorrhage Due to Cirrhosis of the Liver.—

R. B. Preble (*American Journal of the Medical Sciences*, March, 1900) describes four cases of his own and gives a *résumé* of fifty-six found in the literature. His conclusions are that fatal gastrointestinal hemorrhage is an infrequent but not rare complication of cirrhosis of the liver. The changes in the liver may be either atrophic or hypertrophic. In one-third of the cases the hemorrhage is fatal, but in the majority of cases the bleeding occurs at intervals, extending over months or even years. In one-third of the cases the diagnosis can be made at or before the time of the first hemorrhage, in the remainder it is only possible to reach a correct conclusion regarding the origin of the trouble after other symptoms have developed. Esophageal varices are present in 80 per cent of the cases, which in the great majority are found to be ruptured. Fatal

hemorrhages occur where these varices are not present. These cases are probably due to simultaneous rupture of many capillaries in the gastrointestinal mucous membrane.

Dilatation of the Stomach.—

J. H. Musser and J. D. Steele, in the *American Journal of the Medical Sciences* for February, 1900, give the history of a few cases of atonic dilatation of the stomach. As a result of their study the authors offer the following conclusions: The symptoms upon which most reliance can be placed in determining the gastric motor insufficiency are the presence of fluid and food in the stomach after fasting over night; the ready entrance of fluid into the stomach and difficulty of return flow; the absence of visible gastric peristalsis; the recognition of fermentation and intoxication by the products; thirst; and scanty concentrated urine. In determining position and size of the stomach by far the most certain method has been inflation by air through the stomach-tube. Determining the capacity of the stomach by the amount of water required to produce a sense of fulness, auscultatory percussion and Dehio's method, while signs of some value, may lead to error.

SURGERY.

An Improved Method of Abdominal Incision.—

George R. Fowler, in the *Medical News* of March 3, 1900, says that two cardinal points must be borne in mind in making the incision through the abdominal wall. It should be so made that all parts involved in the intended operation are readily within reach. Weakening of the wall of the abdomen should be avoided by carrying the incision, whenever practicable, in the direction of the fibers so as to avoid cross-sectioning the muscular and fibrous structures. The incision in all cases of appendicitis should be so planned as to admit of removal of the appendix. In his experience access to the base of this organ is secured in the largest number of cases through an incision so planned that its center strikes a point corresponding to the intersection of a line extending from one anterior superior spinous process of the ilium to the other, with a vertical line drawn half-way between the median line and the right anterior superior spine. This differs from Clado's point.

The skin incision commences at the upper rounded prominence of the anterior superior spinous process of the ilium, is carried almost horizontally to the outer edge of the rectus abdominis

muscle, from which point it is curved downward and extended parallel with the edge of the rectus for a distance of two and a half inches, or more, as required by the exigencies of the case. The skin, fat, and fascia are divided, and the triangular-shaped flap with rounded corner dissected and reflected downward and outward, exposing the aponeurosis of the external oblique.

A retractor is applied at the lower angle of the wound and another at the middle of the horizontal incision. Traction upon these in the direction of the course taken by the external oblique exposes the latter for a distance of three or more inches, if necessary. This structure is divided in the direction of its fibers to the extent of its exposed portion, two more retractors applied, and the sheath of the rectus exposed and likewise opened. The rectus muscle and the underlying deep epigastric artery and veins are now retracted toward the median line, the outer edge of the incised aponeurosis being retracted in the opposite direction. A space of four inches in its transverse diameter is thus exposed.

With the rectus well displaced toward the median line, care being taken to retract the deep epigastric artery and veins as well, and the outer edge of the incised external oblique aponeurosis retracted in an outward direction, the following parts are exposed: In the outer two-thirds of the space between the retractors is to be seen the muscular portion of the internal oblique, this terminating in the aponeurotic portion of this muscle at the point where the aponeurosis divides to enclose the rectus (the linea semilunaris). The inner third includes that portion of the exposed space left by the inward displacement of the rectus muscle, and is occupied by the posterior lamella of the sheath of the latter. In this space the transverse incision is to be made. For this operation the remaining structures of the abdominal wall may be considered as one layer, and the transverse incision carried directly through these in the direction of the fibers of the internal oblique and transversalis into the peritoneal cavity. The incision is commenced at the inner end of the space beneath the rectus muscle and access gained to the cavity of the peritoneum at this point first; after which, with the finger as a guide, the section is completed. Retraction of the edges of the transverse incision will be found to give ready access to the region of the cæcum.

At the completion of the operation the parts are to be replaced and sutured. The transverse incision is closed by running a catgut suture including all of its layers. In closing the incision in the external oblique aponeurosis, care must be taken to include in the suture the incised edge of the sheath of the rectus muscle. The

muscular structure itself should not be included in the suture, since the interposition of this between the incised edges of the sheath which may follow the attempts to include the muscle will prevent the prompt union of the aponeurosis.

In view of the supreme importance of securing immediate firm and permanent union of the aponeurosis of the external oblique, it is best to employ kangaroo tendon for the suture material in the case of this structure at least. Finally, the skin wound is to be closed. This may be done by the ordinary interrupted suture, although this, as all skin incisions, is best closed by the subcuticular suture.

Bloodless Enucleation of the Tonsils.—

R. D. Fry, in the *Cleveland Journal of Medicine* for February, 1900, says that the operation of enucleation in properly selected cases has many points in its favor over other methods. There is little or no hemorrhage, but if it does occur the tonsil can be easily grasped and ligated. The stump which is left is smooth and heals rapidly, with slight discomfort; the result is a normal throat with restored functions. Cases for enucleation are those in which the tonsil is attached to the pillars of the fauces or the subpalatine space; also where the tonsil does not project beyond the fauces. It is to be employed in cases where there is a possibility of hemorrhage, and in those in which other methods of excision have failed to give relief. Enucleation has two disadvantages—it consumes more time and in some cases causes severe retching. The operation of enucleation means the removal of the tonsil with its capsule by shelling it out entire from the surrounding tissues.

In performing the operation the fauces are thoroughly cleansed with a 25-per-cent solution of glyco-thymolin, which is followed by a spray of four-per-cent solution of cocaine. Two minutes later the tonsil is injected with a ten-per-cent solution of cocaine at six or eight points, fifteen or twenty minims being distributed through the tonsil. The anterior and posterior pillars are covered with a pledget of cotton moistened with a ten-per-cent solution of cocaine. This is allowed to remain for six minutes, when a second pledget, which has been moistened with a freshly prepared solution of desiccated suprarenals, is applied for four minutes. The tonsil thus prepared is exposed by depressing the patient's tongue, and is caught by the curved forceps in its upper portion and pulled inward and outward. This puts the mucous membrane and posterior pillar on the stretch. This membrane is then slit from above downward

parallel to an eighth of an inch anterior to the edge of the pillar. A second parallel slit is made over the tonsil behind the anterior pillar; these slits are joined above and below by oval cuts. The mucous membrane is then stripped from the tonsil, and when the operation is completed it folds over the edges of the pillars and facilitates the healing process. Care should be used not to cut or tear the capsule of the tonsil. The curetting process is continued until the tonsil is thoroughly loosened from its surroundings, leaving nothing but the vessels, around which the wire snare is applied. This requires care in order to enucleate the entire gland. The tonsil is pulled into the loop by a pair of lock forceps, which are not loosened until the tonsils are removed. If tenderness or bleeding occurs during the operation, a further application of cocaine and suprarenals will control it. Soreness and discomfort are usually over in from one to three days. But one tonsil is to be operated upon at a sitting, and the time usually required is thirty minutes.

Ureteral Calculus.—

Howard A. Kelly (*Journal of the American Medical Association*, March 3, 1900) describes the case of a woman 38 years of age who for a week had been suffering from a pain beginning in the left kidney and extending downward toward the bladder. Vaginal examination showed on the left side a tender enlargement of the ureter. A diagnosis of renal calculus was made with a lodgment of the obstruction just before the ureter entered the bladder. The patient was placed in the dorsal position and the ureter cocainized by injecting six cubic centimeters of a one-per-cent solution of cocaine into it and the surrounding parts by means of a long hypodermic needle thrust through the vaginal wall. She was then put in the knee-chest position, the vagina and bladder allowed to fill with air, and the cystoscope introduced. This showed a normal mucosa with the exception of the left ureteral orifice, which was everted and reddened. The orifice was found contracted. The ureteral sound was introduced, which was followed by a discharge of eight cubic centimeters of clear urine. This showed the vesical end of the ureter to be contracted. A ureteral dilator was then introduced and the stricture opened up. Then was introduced a renal catheter, the point of which had been dipped into melted dental wax and olive oil. This catheter was moved to and fro and then passed on into the renal pelvis, which was followed by a discharge of sixteen cubic centimeters, showing the presence of a hydronephrosis. After withdrawing the catheter its

waxed tip was found to be marked by a series of scratches, which the reporter regards as conclusive evidence of stone. The urine which had been discharged was found to contain a minute fragment of a uric acid calculus. Nineteen hours after dilatation an oblong stone, 10 x 3 millimeters, was expelled, followed by immediate relief of all symptoms.

Retroperitoneal Sarcoma.—

J. D. Steele, in the *American Journal of the Medical Sciences* for March, 1900, says that, while rare, these growths occur with sufficient frequency to warrant more attention from the standpoint of diagnosis than they have heretofore received. Males are somewhat more predisposed to this condition than females, and it is most common in the first, fourth, fifth, and sixth decades of life. Traumatism plays a very small part in their production. As a rule, these tumors grow quite rapidly, the average duration in thirty cases being between eight and nine months. They generally originate in the lumbar region, the next most frequent position being the wall of the abdomen near the attachment of the mesentery. About two per cent spring from the pelvis. The tumor is usually lobulated, has a capsule, and is hard and firm in its earlier stages. It is prone to degeneration, generally hemorrhagic in character, though puriform and myxosarcomatous changes are not infrequent. These may advance so far as to give the growth a distinctly cystic character. Metastasis is not common. When it occurs, the liver and lungs are oftenest affected. In the majority of cases the growth involves the intestine, and cystic cavities may empty into the intestinal tract or peritoneal cavity.

The onset of these tumors is insidious. The earliest manifestations are functional disturbances in the digestive tract. The first symptoms that are at all characteristic are those of pressure upon the lumbosacral nerves and upon the venous supply of the lower extremity, shown by pain in the legs and edema in the feet. The symptoms of the later stages are cachexia and neuralgic pain in the lumbar region, with partial or complete obstruction of the intestines and interference with the function of the organs upon which the growth presses. The physical signs are uncertain, depending upon the situation of the tumor and the direction of its growth. It is frequently impossible to determine more than that the growth is malignant in character, and its situation. These tumors are frequently taken for enlarged kidneys and tumors of the suprarenal capsules. All these difficulties of diagnosis are increased when

the growth has reached the size in which it fills the abdomen. Exploratory incision is the only certain method of determining the character of tumors situated behind the peritoneum. Surgical intervention offers the only opportunity for prolonging the patient's life.

A New Method of Dilating a Stricture of the Esophagus.—

J. S. Pyle, in the *Philadelphia Medical Journal* of February 3, 1900, describes a rare case of stricture of the esophagus following typhoid fever. In Keen's work on the surgical complications of typhoid two cases are mentioned, and Osler has described a case. While this complication is rare, the real interest of Pyle's communication relates to his novel method of treating the stricture. The difficulty of swallowing precluded the taking of solid food, and as time progressed the ingestion of liquids was attended with great difficulty. The stricture was situated at the esophageal opening of the diaphragm, and it could not be enlarged by the use of probangs or dilators. He was able to pass a small bougie, and later devised a small instrument somewhat after the plan of a Barnes dilator. Between two layers of fine rubber tissue a silk bag is placed, the whole being, when dilated to the full extent of the silk, about the size of the little finger. This was mounted upon a small rubber tube and carried with the aid of a small wire through the stricture. With a suitable pump the apparatus was filled with water and the stricture successfully dilated. This was accomplished with very little discomfort to the patient and the complete relief of the stricture.

An Easy Method of Reducing Dislocations of the Shoulder and Hip.—

L. A. Stimpson, in the *Medical Record* of March 3, 1900, describes a new method of reducing anterior dislocations of the shoulder which has been tried at the Hudson Street Hospital in ten successive cases, and in no instance has it failed. The principle is that of steady moderate traction upon the arm in abduction. This is accomplished by placing the patient upon a canvas cot. The injured arm hangs down through a hole six inches in diameter. The cot is raised so as to give ample space between its lower surface and the floor. The patient is placed upon the cot, the injured arm allowed to hang through the hole, and a ten-pound sand-bag is attached to the wrist. In a few minutes reduction will be found to have taken place. The procedure seems to be quite painless.

In dorsal dislocations of the hip the patient is placed prone upon a table in such a way that his thighs extend beyond its end. The

uninjured thigh is held in a horizontal position by an assistant, and the injured one is allowed to hang vertically with the leg flexed at a right angle. If relaxation of the muscles is slow, a sand-bag weighing from five to ten pounds is placed on the leg below the knee, or pressure is made with the hand. This method of reduction has succeeded in the author's hands in four-fifths of the cases without the aid of an anesthetic.

Operation for Rupture of the Rectum.—

F. R. England, in the *Montreal Medical Journal* for February, 1900, describes the case of a girl 12 years old who fell from a box, striking a broom-handle, which penetrated the rectum a distance of from twelve to fifteen inches, entering the abdominal cavity. She was seen twenty-six hours after the accident, and her condition was most unpromising. There was general abdominal tenderness with fixation of the muscles, but no distention. The rectal opening was packed with iodoform gauze, the patient placed in the Trendelenburg position, and the abdomen opened. Commencing peritonitis was apparent. The tear in the rectum was easily located, and it was closed with two rows of sutures. The peritoneal cavity was sponged out with a 1-to-10,000 bichloride solution and a glass drainage-tube inserted. Following the operation the patient's condition became very grave and continued so for several days, necessitating the persistent use of heart tonics and stimulants. Convalescence was slow, but eventually the patient made an excellent recovery.

Exploratory Laparotomy under Local Anesthesia for Acute Abdominal Symptoms in Typhoid Fever.—

Harvey Cushing, in the *Philadelphia Medical Journal* of March 3, 1900, says that the use of a general anesthetic is one of the most striking contraindications for the employment of surgical measures in suspected intestinal perforation in typhoid. The patient is already reduced by the disease, and the additional strain put upon him by the general anesthetic may be sufficient to turn the scale in favor of a fatal termination. The chief difficulty in dealing with intestinal perforation is the diagnosis. This difficulty has to be met by an exploratory laparotomy, which can be made comparatively safely under local anesthesia. This exposes the patient to little additional danger and may be accomplished painlessly. The conditions which closely simulate perforation are aortic thrombosis, pulmonary complications, appendicular attacks, suppurating mesenteric glands, cholecystitis, and intestinal hemorrhage.

Removal of Remains of Drumhead, Larger Ossicles, and External Attic Wall in Chronic Otitis Media.—

R. Lake, in *The Lancet* of March 10, 1900, says that complete ossiculectomy is a successful operation entirely free from danger. By it the health is often improved and rarely, if ever, diminished. All cases do not yield to this operation, the indications for which are roughly divided into two main classes: (*a*) Those for the cure of chronic suppurative otitis media, and (*b*) those for the improvement of hearing and cessation of discharge. An uncomplicated otorrhea which has resisted treatment for six months is certainly a case for operation. In none of the writer's cases in which the operation was performed for chronic suppurative disease were the ossicles intact. In old-standing cases the chain is never intact. Of the fifty cases operated, forty-two were cured; three had temporary relapse; and of the eight cases which were not cured, some of them may have recovered later, as they passed from under observation. Improvement was noted in the hearing power in twenty-one cases; in three it returned to normal, and in four it was very much improved. In the remaining fourteen the improvement was appreciated by the patient and friends and was demonstrated by tests.

THERAPEUTICS.

The Tepid Bath Treatment of Typhoid Fever.—

E. Hirschfeld, in the *Australasian Medical Gazette* of January 20, 1900, gives a summary of his results in the use of the tepid bath in typhoid at the Brisbane Hospital. The period comprehended in this report covers the last three years. In 1897 the cold bath was employed, during which period 266 cases were treated, with a percentage mortality of 7.9. In 1898, 147 cases were treated, sometimes with cold and sometimes with tepid baths, the percentage mortality being 8.2. In 1899, 120 cases were treated, the tepid bath alone being used, and the percentage mortality was 4.2.

The routine method of treatment employed was to administer calomel upon admission, or, what was still more frequently employed, castor oil, one-half to one ounce, to which fifteen minims of spirits of turpentine had been added. Temperature in the rectum was taken every three hours, and whenever the thermometer registered 102.2° during the day and 104° at night, a bath was given at 85° F. The usual duration of the bath is twenty minutes. The individual reaction to the bath is carefully noted, the average reduction of temperature being from 1.5° to 2° F. According to

the reaction from the bath, the temperature is increased to 90° or lowered to 80° as the circumstances seem to demand. A liquid diet is adhered to.

The writer states that the chief objection to the use of the tepid bath is that it does not lower temperature as effectually as does the cold bath, but he thinks an extended experience with both cold and tepid baths will convince any one that the latter is far superior to the former. The temperature of the tepid bath is not fixed, but 85° would be a general average for most of them. In a large number of cases a bath at 85° will bring about a more pronounced reduction of temperature than one of 80°. A small number of patients, those advanced in years or children, do better with a bath of 90° than one of 85°. The reasons given for the more rapid lessening of temperature in the tepid bath are found in the fact that the blood-vessels of the skin are not contracted, and hence there is a greater radiation of heat. It is claimed also that a cold bath stimulates the production of heat more than a warm one. In the tepid bath there is an absence of the reaction of temperature, which follows one or two hours after a cold bath. These reasons, he thinks, are sufficient to explain the paradox that a tepid bath frequently lowers the temperature as much as, if not more than, a cold one.

His reasons for preferring the tepid bath are that it readily overcomes the objections and dread of the patient, and is much less frequently followed by shivering. Especially is the tepid bath to be preferred where the heart is involved and where a patient is very weak.

Neuritis from Arsenic Given for Chorea.—

T. C. Railton, in the *Medical Chronicle* for February, 1900, says that the favorite treatment for chorea at the Manchester Clinical Hospital is arsenic. It is given to all children, as it is believed to shorten the attack, and in the majority of cases the arsenic is believed to be followed by no unpleasant features. In a few cases it is necessary to suspend its administration, as it may interfere with the stomach, causing diarrhea, bronzing of the skin, and occasionally neuritis. The notes of the Clinical Hospital show 312 cases of chorea treated during the past ten years. Among this number there were three who developed peripheral neuritis. One was that of a girl of 12 years who was admitted for her third attack of chorea. She was given ten drops of liquor arsenicalis three times a day for about three weeks, the aggregate quantity being equivalent to 6.3 grains of arsenious acid. The chorea was cured, but a fort-

night after the drug was suspended the knee-jerks were found to be absent, and there was marked weakness of the lower extremities. She was compelled to go to bed, and one week later there was paralysis of the upper extremities. A month after the onset of the symptoms the lower extremities were wasted and the legs could not be flexed or extended; muscular reaction was absent to the faradic current in the thigh and calf.

Another case was that of a girl aged 11, who was given for four weeks ten-drop doses of liquor arsenicalis, with a resulting disappearance of her choreic movements. The total amount given was equal to 8.4 grains of arsenious acid. A week after the cessation of the treatment she developed well marked signs of neuritis in the lower extremities, and three weeks later the upper were involved.

A third case was that of a girl aged 10, with a chorea of three months' standing. In this case the Fowler's solution was administered in five-drop doses for three days, ten-drop doses for three days, and fifteen-drop doses for fifteen days, the aggregate quantity being equivalent to 8.1 grains of arsenious acid. The chorea was cured in three weeks, but with the cessation of the choreic movements there developed the signs of peripheral neuritis in both the lower and upper extremities, very similar to the second case.

All three of these cases recovered. The author is of the opinion that it is of little consequence as effecting the development of neuritis how long the treatment is continued, or as to the dosage. This complication is dependent largely upon the amount of arsenic administered, which he thinks should not exceed the equivalent of six grains of arsenious acid in the course of the treatment of any case of chorea.

Dosage of Antitoxin in Diphtheria.—

John H. Musser, in the *University Medical Magazine* for March, 1900, says that the value of antitoxin in diphtheria is unquestioned, but many circumstances surrounding its administration are debatable. The number of cases reported by Musser is small, but includes all forms of the disease and many of the most frequent complications. All cases that were seen within the first twenty-four or forty-eight hours were followed by a mild course, and in no instance were operative measures required. The dose of antitoxin must necessarily be empirical. He began by giving the serum when the treatment was in the experimental stage. The first doses were small, but the results were so satisfactory that he has not found it necessary to increase the initial dose. He thinks the

smallness of the dose and the frequency with which it is repeated is responsible for the freedom from erythema, albuminuria, and the general joint affections which have followed the use of large doses in the hands of others. The only disadvantage of frequent injections is the pain occasioned by them, but this is more than counterbalanced by the absence of urticaria, which is common after large doses. For children up to six years of age the initial dose is 500 units, to be repeated each six hours if the fever does not fall, or if the local manifestations are spreading. In children over eight years of age 1000 units is given as an initial dose, repeated at intervals of eight or twelve hours, as needed. He gives a detailed history of thirteen cases, and states that his results with the antitoxin treatment have been singularly fortunate. Five of these cases were severe. He has not seen a case of death from diphtheria since employing antitoxin.

Ethyl Chloride in General Anesthesia.—

James P. Tuttle, in the *Journal of the American Medical Association* of March 24, 1900, says ethyl chloride is best known as a local anesthetic, though it exerts an anesthetic action when inhaled. He made his first studies in the inhalation of this substance last November. The first patient to whom it was administered was a man 45 years old, who suffered from a fatty tumor of the back. The trade preparation of ethyl chloride known as kelene was employed. In four minutes there was loss of pain sense, but there was no muscular relaxation. The anesthetic was then changed to ether, which was followed by a prompt muscular relaxation. He employs a graduated tube for the ethyl chloride, with a somewhat larger aperture than that used for local anesthesia. An Esmarch chloroform inhaler is covered with several layers of gauze and the ethyl chloride sprayed upon its inner surface. As soon as general anesthesia appears, the kelene is substituted by ether; muscular relaxation comes on, and the anesthesia is easily maintained. In four of his cases the results of ethyl chloride were not favorable—that is, analgesia was not produced. In one of these cases chloroform was substituted; none of them seemed to be worse for the inhalation of the ethyl chloride. He has employed it in about fifty cases. The time required was less than where nitrous oxide was used preceding the giving of the ether. This combination of ethyl chloride anesthesia and ether reduces very much the quantity of the latter drug, with a corresponding quick recovery from the anesthesia. Nausea and vomiting rarely occurred.

The Treatment of Epididymitis.—

H. M. Christian, in the *Therapeutic Gazette* of March 15, 1900, says that for the last few months applications of guaiacol have been adopted as a routine practice at the University and Polyclinic Hospitals of Philadelphia. Since this form of treatment was instituted, about sixty cases of epididymitis have been treated. These were all acute walking cases. In all but six great relief from pain followed during the course of the first twenty-four hours after application. All were able to keep on their feet through the whole of the attack, with little discomfort. The application of the drug was followed in all cases by a smarting and tingling sensation in the skin, lasting for about an hour.

In all cases the testicle was first gently massaged with a 20-per-cent guaiacol ointment made up with lanolin. Some of the ointment was then spread upon lint and applied to the part, the whole being enveloped in a layer of absorbent cotton, over which was applied a snugly fitting laced suspensory bandage. The dressing was reapplied every second day. At the end of about six days after the inflammation and pain had ceased, the guaiacol was substituted by an ointment composed of

℞ Unguentum hydrarg.....
Unguentum belladonnæ.....
Ichthyol.....
Lanolin..... ää ʒ ij.

It was found that this application produced a prompt lessening of the inflammation and a rapid return to the normal size.

Treatment of Aortic Aneurism.—

Moritz Schmidt, in the *Medical Chronicle* for March, 1900, discusses the early diagnosis and treatment of aortic aneurism. During the past eleven years he has seen fifty-four cases. Of these, thirty-eight had paralysis of the left recurrent laryngeal nerve. Tracheal tugging was present in nineteen of thirty-one cases. He regards this as one of the most decisive symptoms in the early stage of the disease. A less definite indication is a murmur. This may be due to tumors of the mediastinum and is frequently absent in aneurism. He prefers iodide of potassium and strict rest in the treatment of aneurism. In addition, Tufnell's limited diet is employed, which includes a marked reduction in the amount of fluid allowed the patient. A lessening of the fluid to 1200 grammes is not difficult, but a further reduction is often followed by distress and must be gradually employed. In one of his cured cases the amount of fluid was reduced to 340 grammes; this was followed by a nervous con-

dition which compelled the raising of the amount of fluid to between 500 and 600 grammes. His paper is illustrated with radiographs. He comes to the conclusion that the treatment of aortic aneurism should be undertaken early, and the condition should be regarded as a curable one, and a rigid system of dietetics and medicinal measures instituted. If these are undertaken with confidence, he thinks that the results in the treatment of this condition will be greatly improved.

Citric Acid in Atrophic Rhinitis.—

L. S. Somers, in the *Therapeutic Gazette* of March 15, 1900, says that the application of any single remedy in the treatment of atrophic rhinitis is foredoomed to failure. The condition is one having such a varied pathology that a thorough understanding of the conditions underlying each case is necessary for its successful treatment. In cases complicated with inflammation of the accessory sinuses, this must be relieved before a cure can be looked for. The mere cleansing of the nose with peroxide of hydrogen and an alkaline solution may often relieve the odor. In the absence of complications he recommends the citric acid application as advocated by Hamm. He has employed this in the treatment of a number of cases which resisted the use of other topical applications. The nasal cavity is first cleansed of all crusts and débris and the affected part covered with a powder composed of equal parts of citric acid and milk-sugar finely triturated. This frequently relieves the discharge and odor for several days. It does not cure, but overcomes one of the most disagreeable features of the disease, namely, the odor. Its successful action depends upon a direct application to the diseased tissues. For this reason it is necessary to remove all foreign material and to thoroughly cleanse the surface. Each application is followed by a disappearance of the ozena for from one to two days.

Action of Suprarenal Extract upon the Heart.—

W. H. Bates, in an article upon suprarenal therapy in the *Medical News* of March 24, 1900, says that in addition to the local hemostatic effect of suprarenal extract, it is to be remembered that it has a very marked influence upon the heart's action, it being one of the best cardiac stimulants. It is devoid of direct toxic properties, as we are dealing with a substance liberated by the normal functions of the body. The internal administration does not affect the normal heart or normal blood-pressure, but under its influence an intermit-

tent pulse becomes regular, a weak pulse stronger, a rapid, weak pulse less rapid and stronger. When anemia or hyperemia of the vessels of the face or extremities is present, the administration of suprarenal is followed by a return to the normal, because the increased strength of the heart-beat equalizes the circulation and distribution of the blood to all parts of the body. He describes the case of a man aged 60 years who had general arterial sclerosis with a double aortic and double mitral murmur. The patient was in bed, too weak to rise; there was no pulse at the wrist, and the hands were cold. He was given five grains of powdered suprarenal, which was followed by a prompt return of the pulse at the wrist, and a general improvement in the circulation.

Chloretone in the Treatment of Insomnia.—

R. W. Wilcox (*Medical News*, April 14, 1900), in an article on some recent advances in the treatment of insomnia, relates some new theories regarding the physiology of sleep, based upon the neuron theory. He thinks that an ideal hypnotic should be derived from the alcohol radicles, and must be free from depressing action on the heart and blood-vessels. It must not disturb the stomach, must be safe and reliable, and at the same time palatable. Each one of these requirements is met in the new hypnotic, chloretone. This substance is a derivative of chloroform and acetone. It is prepared by the action of canstic potash upon chloroform and acetone. It occurs in white crystals having a strong odor of camphor. It is soluble to the extent of one per cent in cold water. It is a hypnotic and an analgesic, one-per-cent solution being equal to a four-per-cent solution of cocaine. The customary dose is from six to eighteen grains, but there is a case on record in which 108 grains was taken at one time, which had no other effect than to cause the patient to sleep for about three days. Experiments show that chloretone passes unmodified from the digestive tract to the blood; that it is decomposed within the body is shown by the fact that, while volatile, it is not found in the expired air, nor has it been positively recognized in the urine.

Carbonate of Guaiacol in Typhoid Fever.—

J. C. Crist, in the *New York Medical Journal* of March 3, 1900, reports thirty-two cases of typhoid fever without a death. His cases ranged in duration from three to eight weeks, four weeks representing the average fever period. The treatment consisted of rest, baths, diet, and medication. The general directions are that as

soon as the diagnosis is made the patient is instructed to take a thorough bath and go to bed. These baths are continued daily during the course of the disease, and are usually given at the evening hour. Extra bathing is employed if the patient is restless, but baths are not given, even if the patient has a temperature as high as 104°, if he is resting quietly. In the majority of cases one bath a day is given. The diet consisted of milk, or milk and lime-water, but if milk was not well borne by the stomach, the patient was given soft-boiled eggs, meat broths, and soups.

In adults five grains of carbouate of guaiacol was administered every six hours. The dose and frequency of administration was varied in different cases, but none were allowed to go longer than twelve hours without a dose of guaiacol. The administration of the guaiacol should be carefully watched, and as convalescence begins the evening dose should be omitted, as it may be followed by toxic symptoms.

Suprarenal Extract in the Urethra.—

In a discussion before the New York County Medical Society (*Medical News*, March 24, 1900) J. A. Moore stated that he had used suprarenal extract more than two hundred times in the urethra. He has found instrumentation possible without bleeding, and with the production of very little irritation if the extract has been previously used. This should consist of a 10-per-cent infiltrate solution, which may be injected without causing the slightest irritation, and is followed by a decrease in the irritability of the pathogenic structures. When a structure is to be stretched, it lessens the congestion, increases the caliber of the urethra, and prevents bleeding. The effect of suprareual extract is evanescent, and if two or more souuds are to be passed it is necessary to employ a second injection. There is no danger of constitutional symptoms, nor has the extract any action on the urethra. In six meatotomies he used a 12-per-cent solution injected hypodermically and had very little bleeding after the operation. In gonorrhea the injection of suprarenal extract in two cases gave complete relief from the smarting, and there was no pain in urination during the acute stage.

Orexin Tannate in Loss of Appetite.—

J. W. P. Smithwick, in *Merck's Archives* for March, 1900, says this substance is one of the best remedies in anorexia of children. In adults he prescribes it in six-grain doses given an hour before each meal; in children the dose is according to age. He has used

the drug himself for dyspepsia with delayed digestion. In anorexia, symptomatic in character, he has always observed good effects from its administration; the same has been true in convalescence from acute diseases. He has employed the drug in loss of appetite from various causes, which may be classified as follows: Functional gastric atony, 5; anemia, 3; tuberculosis, 4; convalescence, 6. In all cases the body weight increased, but more rapidly in some cases than in others. This feature was especially noticeable in phthisical patients. The beneficial action of the drug was noticed in most cases soon after its administration was begun. The duration of the treatment varied with the temperament of the patient and the character of the trouble; in simple atonic dyspepsia it was not necessary to give the drug longer than three weeks, while in anemia the treatment was continued from three to six weeks.

Croton Oil.—

A. K. Bond, in the *Therapeutic Gazette* of March 15, 1900, says that this drug is commonly considered as a last resort in desperate cases. It is usually described as a "violent drastic and hydragogue cathartic which may excite an erythema, even when taken internally." He has administered it frequently in the past eight or ten years and found it perfectly manageable, and it has taken a place in his practice that no other drug seems to fill. The prejudice is due largely to an error as to the dosage of the drug. The impression given by the text-books is that one drop should be employed. This, he finds, is too much, one-sixth or one-eighth of a drop being sufficient to obtain a gentle purgative action. In this dose the drug becomes an agreeable and gentle laxative. In doses of one drop the drug may act as a violent depressing poison, lowering the pulse and temperature. Care should be exercised not to give it in inflammatory conditions of the bowel, and in those cases in which there is impaction there should be an adjustment of the dose to the conditions which obtain in a particular case.

Cannabis Indica.—

Angel Money, in the *Australasian Medical Gazette* for February, 1900, says cannabis indica is an invaluable remedy in the treatment of disturbances of the sensory centers. It is one of the best remedies in headaches of many kinds, and is especially useful in cephalic sensations so common in individuals of neurotic habit. Many physicians prescribe the extract in pill form, but he prefers the tincture or fluid extract. He thinks that cannabis indica given in

the form of mixtures with other substances is a defective method, as the active principles are often precipitated on the sides of the bottle containing the mixture. For some time past he has prescribed the fluid extract of Parke, Davis & Co., five to ten drops to be taken on moist sugar, swallowed with a draught of water. In this way the patient gets all of the active principles of the drug.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

The Analogy Between Cancer of the Uterus and Cancer of the Breast.—H. A. Kelly (*Bulletin of the Johns Hopkins Hospital*, March, 1900) says that we cannot reason too closely on the supposed analogy between cancer of the uterus and cancer of the breast. Glandular metastasis, which plays so important a rôle in mammary cancer, has very little to do with the extension of the disease in uterine cancer. The latter progresses through the tissues from its cervical focus. The aim of the operation is to give the diseased cervix the widest possible berth instead of removing the uterus and the pelvic glands. The frequent recurrence in the vaginal vault emphasizes the importance of beginning enucleation as distant as possible from the junction of the vagina with the cervix. In every case the ureter should be catheterized, which can be readily done by putting the patient in the knee-chest position. After the catheter is in position the patient is again placed on her back. If this preliminary catheterization is not performed the operator must enucleate the cervix, for fear of including the ureters in the ligatures. After curetting the diseased cervix he cuts through the vagina on all sides and strips it loose from the bladder, so as to expose the vesical uterine peritoneum. The opening is then made posteriorly into the recto-uterine pouch, which frees the uterus from all its attachments excepting its broad ligaments. A gauze pack is then put into the pelvis above the uterus, while the anterior uterine wall is caught with the forceps and drawn down through the anterior incision until the fundus is inverted. The uterus is then divided from above downward. One-half of the uterus is then grasped by the forceps—one placed on the body and one upon the cervix; an incision is then made transversely above the cervix, dividing each half into two portions, the uterine vessels are clamped, and the body of the uterus removed. After the removal of the body of the uterus on both sides the cervix is taken out, beginning on the side of the cervix which is least implicated. After three-fourths of

the uterus has been removed the most important step of the operation is reached, namely, the removal of one-half of the involved cervix with the infiltration of the broad ligaments; the extirpation of the greater portion of the uterus affords a maximum space for the operator. The diseased portion of the cervix held in the forceps is to be exsected by the widest possible incisions. A ligature in some cases can be employed, but hemorrhage is best controlled by use of the hemostatic forceps devised by Dr. Skene, of Brooklyn. If the ureter is outside of the diseased area it may be left, but in some cases it is necessary to resect it and reattach it to the bladder.

Steam in the Treatment of Endometritis.—

F. W. Johnson, in the *Boston Medical and Surgical Journal* of March 15, 1900, states that he has used steam in the treatment of chronic endometritis and menorrhagia. He reports thirty-one cases. He speaks in the highest terms of the method, and gives an extensive *résumé* of the literature.

The technique is as follows: An ordinary steam atomizer is used for generating the steam. A hard-rubber tube eight inches in length, the size of a No. 18 French bougie, conical at one end, is connected with the boiler by soft-rubber tubing. The hard-rubber tube should be sterilized. The cervix is wiped dry with sterile gauze, which should be carried into the uterine cavity. The steam is then directed into the uterine cavity and the cervix. The application is continued for thirty seconds, and is then withdrawn and the cavity wiped dry, when it is again repeated for thirty seconds. The patient is kept in bed from four to six days. The steam as it leaves the boiler has a temperature of 212°, but it falls somewhat in passing through the tubing, and when it reaches the uterine cavity the temperature is about 192° F. There is no danger of burning too deeply if the steam is used as above described. The author finds the method has a distinct advantage over curettage, in the fact that it evenly destroys the endometrium, not leaving portions of tissue, as is done when the curette is employed. The literature shows that in many cases in which the application has been continued too long the cauterization has extended below the endometrium, involving the muscular tissue, and the uterine cavity has been obliterated. In senile cases of endometritis this obliteration has a distinct advantage and may be deliberately employed. The method described by Johnson never destroys the entire endometrium, as was definitely shown in four of his cases in which the uterus was extirpated and examined after the operation.

Scarlatinous Sore Throat.—

W. J. Class, in the *Journal of the American Medical Association* of February 24, 1900, gives a further study of his researches on the identity of the scarlet fever germ, which he announced some time ago. The material consisted of 300 cases; 212 of these were scarlet fever, and in 88 there was a sore throat without skin lesion. The specific germ which he described in his first communication was found in all of the 300 cases. In the throat cases other germs were frequently found in connection with the diplococcus scarlatinæ. In these cases this bacillus was in each instance separated by fractional cultures and obtained in pure growths. A further proof of the identity of the germ which he has discovered is furnished by the fact that the serum from persons suffering from scarlet fever has a prophylactic effect when injected into mice. He has experimentally determined that a virulent culture of the diplococcus scarlatinæ, when injected into mice, kills in about twenty-four hours. If they have previously been given a few drops of human blood-serum from a person suffering from the disease, their life is preserved from forty-eight to seventy-two hours.

R. H. B. Gradwohl, in the *Philadelphia Medical Journal* of March 4, 1900, gives his preliminary report on the etiology of scarlatina. He has confirmed much of the work of Class, having found the diplococcus in seven cases of scarlatina. A point of interest noted by him in his experiments upon mice was the transference of the contagion directly from one animal to another. If a mouse was inoculated and kept in a cage with another mouse which had not received the injection, the latter sickened and died and the diplococcus could be recovered post-mortem. This is an additional confirmation of the contagious character of the bacillus. He has confirmed Class's previous observation that the microorgauism in question is pathogenic for swine. The uniformity of the results and his experiments confirm him in his view that the organism described by Class is the specific cause of scarlet fever.

Fetus Papyraceous.—

Frederick H. Parker (*Medical News*, March 10, 1900) tells of a woman who had been delivered of her first child some three months previous to coming to him to tell him of menstruation having returned regularly once or twice and then disappeared, which caused her to think that she must be pregnant. He told her this irregularity while nursing was not unusual, and several weeks after she returned to inform him that menstruation had returned with profuse flow.

In 1899 she became pregnant, the term to end in December. There were no unusual symptoms during the period, with the exception of an occasional pain in the side, when on December 24 he was called to her, the husband stating that two small cords had been hanging out for twenty-four hours. She suffered from light pains and headache. It was supposed that there was a prolapsed funis, but instead the "cords" were found to be two legs about the size of small lead-pencils, with the cervix about one-half dilated and the membranes intact. With two fingers he took away the skin and skeleton of a fetus about six inches long, which looked as though it had been put through a wringer, the viscera and brain having entirely disappeared. An umbilical cord, small and shriveled, was attached; this broke off. Twenty-four hours later the woman was delivered of a healthy ten-pound infant. The secundines were inspected, but the only thing indicating a placenta was a portion of the sac of the infant about four inches in diameter, thickened about one-eighth inch. The mother's recovery was uneventful.

The reporter wonders how the woman could carry a dead fetus for two years and then go through a normal gestation without complications.

The Value of the Blood-count in Anemia.—

An editorial in *Pediatrics* of March 15, 1900, dealing with the value of the blood-count in anemia in children, we think reflects the views held by many physicians regarding the value of blood-count, not only in children, but in adults. The writer says it is a well established fact that a severe grade of anemia may exist without the red blood cells being lowered to any remarkable extent. In secondary anemia loss of hemoglobin is the first change to be noted. Then changes in the shape and size of corpuscles are observed before the number is reduced. Lastly, the so-called degenerative changes, as evidenced by the inoculated red cells, are seen. One accustomed to examination of the blood can learn far more about a patient's condition by examining a smear stained with Ehrlich's solution than by a count of red cells alone. In fact, a count of the red cells is sometimes very misleading if not accompanied by an examination of the smear. Even in very severe anemias the blood-count may at times be above normal from cyanosis or sudden concentration by purging. Errors will not arise if a stained specimen be examined at the time the count is made. A specimen stained with Ehrlich's solution, with which a good operator is thoroughly familiar, will often enable him to arrive at a very accurate idea of the

degree of the anemia from the stained specimens alone. More can be learned by this method than from the blood-counter and the hemoglobinometer combined.

The Significance of Earache in Children.—

T. H. Halsted, in the *Medical News* of March 17, 1900, says that the view that earache in children is commonly neuralgic is, unfortunately, too prevalent, both among the laity and the profession. Earache in children is generally caused by an inflammation of the middle ear, suppurative or catarrhal. Infants and young children may have suppuration in the middle ear without giving evidence of pain or without rupture of the membrane. In the absence of a known cause of pain, the ear should always be examined in children. It has been shown by examination of the middle ear during life and post mortem that a purulent otitis media is nearly always present in the acute infectious diseases of the gastrointestinal and respiratory tracts in young children, especially in gastroenteritis and bronchopneumonia, to which disease it probably stands in a causative relation. The cause of death in many acute and chronic diseases and meningitis and in the exanthemata is the result of unrecognized and untreated abscess of the middle ear. Repeated earaches are ordinarily but a sign of acute exacerbations and chronic otitis media, resulting from adenoids. In adult life, so-called catarrhal or progressive deafness is often but an advanced stage of otitis media, which has its beginning in early childhood.

FORENSIC MEDICINE.

Suggestion and Mental Instability.—

The Lancet of March 17, 1900, editorially discusses the case of Crook *vs.* Crook and Horrocks. This case was one in which Dr. Crook brought a suit for divorce against his wife, alleging her misconduct with Dr. Horrocks, the latter being named as corespondent. Some years before this action Mrs. Crook had been under the personal care of Dr. Horrocks, for some ailment peculiar to her sex. After this time Mrs. Crook bore a child, to which she was devotedly attached.

Some time after this occurrence Dr. Crook visited a palmist. The latter told him a number of agreeable things, and he was so much encouraged by what she said that he urged Mrs. Crook to see her. The palmist told Mrs. Crook that she would be separated from her husband, but not by death, and that she had broken her marriage

vow. Later on Mrs. Crook asked her husband what was meant by "adultery." She then confessed herself guilty of the offense, and named Dr. Horrocks as her partner in guilt. She made a written statement of her infidelity, which was afterward repeated and amplified. The law in England, as should be the law everywhere, requires that the evidence of adultery must have corroboration. Later, Mrs. Crook denied the confession. All the evidence goes to show that she was simply laboring under an obsession which had its origin in the suggestion of the palmist.

The case is an interesting one, as raising the question of the power of suggestion in an unstable mental condition. It is evident from a description of the case that Mrs. Crook was in a very receptive state at the time she went to the palmist. It would be very easy for a suggestion such as described to reach the dimensions of a delusion, and when it did so the accusation would naturally follow.

Chloral Poisoning.—

P. F. Rogers, in the *Medical Record* of March 10, 1900, gives an account of a middle-aged man who was in a mental state bordering on melancholia, due to worry and the use of alcohol. Chloral hydrate, forty grains, and potassium bromide, fifteen grains, were directed every three hours, with a double dose at bedtime. The prescription was written on Thursday, and the patient was not seen again until the following Monday. He was then found in bed with the knees and chin approximated; the extremities were cold, and he was jerking and rolling about. Breathing was slow and stertorous, with frequent prolonged grunting expirations. The pulse was slow and soft; the face was ashen gray, with parched lips and swollen tongue; there was marked stupor. On inquiry it was found that since the prescription had been given he had had the mixture filled four times, and had been drinking half of a small glassful at a dose. He had slept and been wakeful by turns, but was generally in a happy mood. During the time he had eaten heartily and had taken little or no alcohol. It was estimated that during the three days he had taken no less than eight ounces of the mixture, or 640 grains of chloral and 960 grains of potassium bromide. Recovery was rapid under strychnine.

Making a Will Under Difficulties.—

A London correspondent of the *Medical News* of March 10, 1900, describes a curious case of will-making under difficulties, which has been decided in the English courts. An old lady had a stroke of

paralysis and aphasia, and was advised by her medical attendant to make her will. The difficulty presenting itself, however, was that she was not only unable to speak, but could not write. Her physician wrote down the names of her relatives upon a series of cards, and the various items of her extensive property on a second series. The card containing a description of a piece of property was then laid in front of her, and she selected from the cards containing the relatives' names, and the two were placed together. This was continued until all the items were associated with the names of the persons whom she wished to have them. From these "instructions" a will was drawn up and read to the testator, who nodded her assent to each item and signed the whole by making her mark. The will was contested, but the judge stated that the method used had not only been skilful, but perfectly fair, and admitted the will to probate.

Damages for Injury from Fright.—

According to the *Journal of the American Medical Association* of March 31, 1900, the Supreme Court of Texas has confirmed a judgment which was obtained for traumatic neurasthenia resulting from physical shock or by a mental shock produced by fright. The court reversed a previous finding, in which it was held there could be no recovery for mere fright, not attended or followed by other injury. In its decision the court has carefully considered the numerous authorities on this subject, and it comes to the conclusion that there is no substantial difference between a case where an injury has been inflicted through physical agencies and one in which a mental emotion constitutes one of the links in the chain of causes which have led to the injurious results. The court concludes that a physical injury resulting from fright or mental shock caused by the wrongful act or omission of another may be good ground for action, and the injured party is entitled to recovery of damages, provided the act or omission is the approximate cause of the injury.

Collapse or Death from Blows upon the Chest or Epigastrium.—

George W. Crile, in the *Philadelphia Medical Journal* of March 31, 1900, gives an experimental study of the cause of collapse or death from blows upon the epigastrium and chest. These studies refute the popular and professional notion that death is caused in these cases by exciting the inhibitory action of the solar plexus. No amount of injury inflicted upon this structure, either directly or indirectly, was capable of causing an inhibitory action upon the

heart, and in no way did such injury contribute to death or collapse. Manipulation of the solar plexus did produce vasodilatation in the "splanchnic area," causing a fall in blood-pressure. Blows or violence transmitted through the diaphragm or the walls of the chest produced immediate arrest of the heart's action, which in some cases was permanent, depending upon the violence of the transmitted shock; in other cases there was a momentary arrest followed by a slow and marked fall in the blood-pressure. Blows upon the naked heart produced like results, but the effects were more profound.

Gastrotomy for Foreign Body in Stomach.—

G. G. Hopkins, in the *Philadelphia Medical Journal* of March 10, 1900, reports the case of a boy aged 19, who, to increase his income, took to giving performances in cheap theaters by swallowing various objects. The most of these were passed by the rectum, but there was an accumulation in the stomach which was followed by pain in the epigastrium. The swallowing of these objects was accomplished from September 2 to December 16. An *x*-ray examination showed foreign bodies in the cardiac extremity of the stomach. An effort was made to remove these by a diet of crackers and other starchy foods. This not succeeding, a gastrotomy was performed, and from the stomach was removed 129 common pins, 6 hairpins, 2 horseshoe nails, 11 wire nails, 2 door keys, 2 steel watch chains, 1 brass watch chain, and 1 finger-ring with a stone in it.

A Mirror Test for Simulated Blindness.—

Percy Fridenberg, in the *Medical Record* of March 17, 1900, describes a new test for detecting simulated blindness in one eye. It consists of a frame to which is attached a rod carrying a handle. At each end of the frame a test card is placed, one on the outer side of each eye. A mirror is attached to the horizontal frame, which is rotated at various angles. The rotation of the mirror carries the reflected image out of the field of vision of one eye and into that of the other, and it is impossible for the patient to tell with which eye the object is seen. The test is the most ingenious so far devised.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St, Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

RUMINATION AND PERIODIC AND HABITUAL VOMITING.[1]

BY FENTON B. TURCK, M.D., CHICAGO.

Rumination, or merycism ("chewing the cud"), is characterized by return of the food without nausea or effort, through the esophagus into the mouth, to be rechewed and reswallowed. This occurs not ouly without distress, but is accompanied often by a peculiar enjoyment. Rumination differs from the commoner condition of regurgitation, yet the latter may sometimes merge into the former. Rumination was described by Fabricus Aquapendente in 1618. Comparatively few cases have been reported since 1896; in that year Einhorn collected a total of 106 cases. The chief cause of this condition is a neuropathic constitution, and it is found with relative frequency among hysteriacs and degenerates.

The chief characteristics of the cases coming under my observation are: (1) A subconscious habit which closely simulates volitional movements; (2) pathological conditions often exist which act in connection with the pneumogastric nerve in a reflex way; (3) ruminating patients can suppress the act, but in so doing they feel considerable distress. Such suppressiou is often followed by a period iu which the habit is followed with increased vigor. In one of my cases a suppression of rumination caused great discomfort, which was accompanied by hiccough and a sensation in the back of the head which is described by the patient as if "wheels were going round." A return to the habit was followed by relief of these subjective symptoms.

In the early history of these cases there appeared to be some peripheral irritation that caused the food to be ejected from the

[1] Presented with exhibition of cases before the Chicago Medical Society.

stomach, which was followed by a sense of relief. If this occurred soon after a meal, the food had a sweetish, pleasant taste, which induced the patient to remasticate and swallow it again. An act which at first was voluntary to relieve distress, soon became involuntary or subconscious. It will thus be seen that rumination in its essence is a pathological imitation of natural movements. It is primarily excited by a peripheral irritation of the pneumogastric nerve, and it is often associated with chronic gastrointestinal diseases, diseases of the liver, kidneys, and pelvic organs.

In the cases that have come under my observation diseases of one or more of the abdominal organs antedated the ruminating habit. How far they were responsible for the condition was not always possible to determine.

In every case of rumination, peripheral irritation of the vagus nerve should be looked for, and should be corrected by both local and general treatment. Such irritation occurs in gastrointestinal diseases, diseases of the liver, kidneys, and pelvic organs, and is not infrequently dependent upon splanchnic congestion. A nonrecognition of these important points explains why Korner's method of treatment with small pieces of ice is frequently ineffectual; the same is true of the morphine muriate method of Rossur. Posisgen, Boas, and Einhorn have frequently given relief by suggestion, while Hemmeter's method of exclusive rectal feeding has often been followed by good results. It is obvious that suggestion is of importance in controlling a subconscious state that has developed into a "habit."

Case 1.—M. P——, aged 39 years, married, by occupation a merchant, complained of periodic regurgitation of food preceded by eructations of gas, which has existed for fourteen months. At the beginning of this trouble the attacks came on about once a month, but during the last six months they have occurred as often as two or three times a week. The family history is negative. As a child, and up to his thirty-fourth year, he was healthy. At that time he suffered with rheumatic pains, most marked in the legs, associated with symptoms of indigestion. Lavage was used for the stomach trouble, and about one year ago he was sent to Mt. Clemens for the rheumatic trouble. His condition gradually grew worse, the gastric symptoms were aggravated, and there was marked general weakness and loss of weight. During his present illness he has felt a heavy sensation in the epigastric region followed by eructations of gas; this is followed by regurgitation of food in small quantities, which is either expelled or reswallowed. The attacks

begin immediately after eating and continue for several hours. They occur quite regularly three times a week and come on very snddenly. His hands and feet become cold and face pale; there is increased heart action, but no temperature. He has never vomited, and his bowels are not constipated. The regurgitated matter at the onset of the attack is not objectionable, but toward the end it becomes very sour and bitter.

On examination he was noted to be pale and weak; was five feet four inches in height, and weighed 130 pounds. There were no heart murmurs, and the cardiac area was normal. The liver was slightly enlarged, extending to the upper border of the fifth interspace. The gastric area, as shown by the gyromele, was within normal limits. The stomach walls showed firm resistance to the No. 3 or stiffer cable, which showed that there was no thinness of the muscular wall—if anything, hypertrophy. The chemical analysis of the stomach contents showed free hydrochloric acid between attacks, amounting to 15; the total acidity was 35. Six hours after a meal the stomach was found to be empty. During the attacks the free hydrochloric acid was found to be 30 and total acidity 75. An examination with the gyromele during the attack showed that the stomach had firm walls. The microscopic examination of the stomach contents at this period showed mucus and food remnauts with colonies of bacteria.

The blood examination showed red blood-corpuscles 3,900,000, and hemoglobin 65 per cent. The urine during the attack was diminished in quantity, averaging about 800 cubic centimeters. Between the attacks he passed from 1200 to 1500 cubic centimeters, with a proportionate increase in urea. There was no albumin and no sugar.

As the patient was in the habit of expelling a part of his food, he was instructed to swallow it as soon as it was regurgitated, even if distasteful to him. This was to overcome the failure in nutrition caused by the loss of food. The patient followed this instruction, and a subsequent examination made 16½ hours after a meal, the latter consisting of meat, vegetables, bread and butter, with one pint of water, showed the stomach contents transformed into chyme, ready for intestinal digestion and absorption, but could not pass through the pylorus. Between attacks the stomach was found empty within six to eight hours after a meal. If bran was given during the attack, it was found in the stomach the following morning, and none in the feces; if given between the attacks, the stomach was found empty, the bran appearing in the discharges

when the colon was washed out. The symptomatic diagnosis of intermittent rumination and periodic pyloric spasm with a chronic gastritis was made.

The treatment consisted of a diet of finely chopped meat for two meals daily, with no liquid during the attacks. Between the attacks an abundance of water was taken one hour before meals; also a daily colonic lavage (131° F.), a gastric lavage, and sitz bath. The gyromele was used to remove mucus, followed by pneumatic gymnastics with a bag in the stomach to prevent the escape of air by the esophagus. The stomach walls were disinfected by an application of balsam of Peru, and the bromides of potassium and strontium, with valerian and asafetida, were given. Slow extension movements were made daily, with resistance, for the purpose of improving the general tone of the muscles and stimulating the circulation. The intragastric electrode was employed with the gyromele, so as to reach the pyloric region. There was first used a rapid faradic current, followed by galvanism, the latter being slowly interrupted, with the electrode in the cardiac region. In addition, the patient was instructed to reswallow his food.

At the end of eight weeks the blood-count showed red corpuscles to be 5,200,000, hemoglobin 80 per cent, and weight 139½ pounds. The attacks had diminished in number, severity, and duration, and there was an improvement in the general strength and ability to work.

Case 2.—S. McD——, a woman 24 years of age, single, complained of constant regurgitation of food, which is remasticated and swallowed again. The family history shows the father to be neurasthenic; a sister had chorea when a child.

This patient suffered from stomach trouble as a child, and often had to leave the table to vomit. These attacks were free from nausea. In early life, while living in the country for ten or twelve years, she was free from these troubles. She has suffered from indigestion and headache for years. The stomach trouble and headaches disappeared when the habit of rumination became established one and one-half years ago. If she swallows food and prevents regurgitation, she has an attack of hiccough. Her former weight was 127 pounds; she now weighs 120 pounds. The regurgitation of food continues for from four to five hours after each meal. The food is remasticated and swallowed, a proceeding which affords the patient considerable satisfaction. During this period there is slight pain in the occipital region, which is described by the patient as "like wheels going round." During rumination, the right pupil

dilates and the left pupil contracts down to the size of a pin-head. The appetite is fair and the bowels are regular. She is troubled by terrifying dreams, in which she screams aloud and often awakes. She is well nourished. Anesthetic areas are found on the left side; the right side is normal; the dermal sense is not impaired anywhere on the body. There are painful areas in the gastric region and back. Examination of the lungs is negative. The heart's action is rapid; it is dilated, and there are signs of cardiac myasthenia, but no murmur. The gastric area as outlined by the gyromele shows normal limits. The duodenal sound passes readily from the stomach into the duodenum.

Five hours after the administration of Ewald's test meal there were remnants of food in the stomach, mixed with mucus. There was a weak congo reaction. Di-methyl-amido-azo-benzol gave no reaction for hydrochloric acid. Four hours after a meal of chopped meat, potato, bread and butter, free hydrochloric acid 8 and a total acidity of 40 was found. Large pieces of meat were removed from the stomach unchanged. Peptone reaction was marked. Six hours later the stomach was practically empty, but the gyromele freed some mucus from the walls. There were food remnants, leucocytes, and colonies of bacteria; the small intestine was distended with gas. The examination of the colon revealed nothing abnormal. There was chronic proctitis and a discharge of pus from a small fistula at the end of the coccyx, which has existed for two years.

Examination of the urine shows no albumin and no sugar. Pus celis, mucus, triple phosphates, and earthy phosphates are found in great quantity.

The diagnosis was symptomatic rumination, with gastritis. The relation of the associated conditions could not be accurately determined.

Case 3.—A. B. J——, a woman of 31 years. The father had stomach trouble all his life. The mother died at the age of 37 years of liver disease. There are brothers and sisters who have stomach trouble. When a child she had sick-headache. Menstruation began at 16 and was normal. She was married at 26; has had three children, having lost two in infancy. The child now living is apparently healthy.

Her present stomach trouble began when she was 16 years old, and has continued ever since. For a few hours after a meal rumination continues, and regurgitated food has a pleasant taste and is therefore swallowed again. At times, however, depending upon the class of food, fermentation may take place, and after an hour

or so the food becomes repulsive and is rejected. She has lost weight, is tired, and has no ambition. The bowels are constipated. She does not appear emaciated, though her tissues are soft and flabby. There is accentuation of the second pulmonary sound, with a rapid heart. Examination of the lungs and liver reveals nothing abnormal. The stomach is dilated and prolapsed, with atrophy of the gastric glands and a patulous cardia. Eight hours after a meal there is retention of food. The intestines are tympanitic. The colon is prolapsed and the sigmoid dilated. The uterus is prolapsed; the right ovary is tender and enlarged, the left is normal.

The twenty-four hours' urine amounted to 750 cubic centimeters; it contained twelve grammes of urea and traces of albumin, with a few hyaline but no granular casts; sugar was absent. The blood gave a red count of 4,250,000, with a hemoglobin percentage of 65. Examination of the stomach contents showed achylia. Ten hours after a test meal partly softened food was found in the stomach, but no peptonoids. The gyromele in the stomach for fifteen minutes provoked no secretion of hydrochloric acid or ferments.

The symptoms of this case clearly pointed to a case of rumination with atrophy of the gastric glands, accompanied by prolapse and slight dilatation. These conditions, associated with retention of food and patulous cardia, seemed to have existed for many years and may be related to the rumination; the albuminuria may have been caused by the gastric disturbances.

Periodic or habitual vomiting is a symptomatic disorder, characterized by regular recurring cycles of vomiting, or the more or less constant rejection of food. Leyden described a symptom-complex which he termed periodic vomiting, the causes of which were unknown, and which was characterized by regular recurrence, the attacks coming on suddenly while the patient was in apparently good health. Nervous vomiting may be divided, for description, into three classes: (1) cerebral, spinal, or central vomiting; (2) hysterical or neurasthenic; (3) that caused by irritations of various parts of the body.

In my first case marked splanchnic congestion was the earliest symptom. This was followed by abdominal pain of increasing intensity, and finally all the symptoms of profound shock.

If vomiting follows the distressing, nervous, painful symptoms, there may be no relief until large quantities of morphine are given. Gradually the vomiting becomes less and less, when the combination of symptoms disappears and the patient rises from bed seemingly

restored to health. The cases are marked by an almost chronological exactness in the periodicity of the attacks, which are closely related to an increase of hydrochloric acid in the stomach. These cases closely simulate the gastric crisis of locomotor ataxia.

Case 4 was a typical one. M. A. P——, aged 36, is a man of Swedish nationality, married, and by occupation a hotel-keeper. He complained of periodic vomiting every three weeks, lasting from two to ten days. This trouble has continued for the past two years, and was preceded by belching of gas and gastric disturbance. The attacks come on suddenly, at any time, and are most frequent if the stomach is empty. There are at first eructations of gas; then the abdomen becomes hard and distended. This is followed by nausea, accompanied by diffused pain over the epigastrium. There is no pain on pressure. What was at first thought to be gas was later determined to be air. This was determined by auscultation, with the stethoscope placed over the twelfth dorsal vertebra behind, and over the lower part of the sternum. By this means it was at once seen that the patient was swallowing air; as the process went on, the stomach became more and more distended. The stomach became tympanitic; there was headache, with slight delirium and nervous anxiety. The hands and feet were cold, but there was no temperature. The pain and nausea increased and vomiting ensued; the vomited matter was at first mucus, but later bile was vomited when the stomach was empty. If the stomach was full, there was first the vomiting of food, and then mucus and bile. The pain did not cease with the vomiting. The attack continues for ten days, during which there is complete anorexia. The only relief is from morphine, which stops the pain, but not the vomiting, unless given in very large doses. Between the attacks the patient has a good appetite, the bowels are regular, and he feels strong and well. There is no specific history. The patellar and pupilary reflexes are normal. Romberg's symptom is absent. There is prolonged expiration over the right pulmonary apex. The heart is normal, except that it is rapid during the attack, and the second sound is accentuated at the pulmonary valve. The liver is somewhat elevated during the attack; the rectum and genito-urinary organs are negative. The gastric area extends to a finger-breadth above the umbilicus. The attacks are followed by a certain amount of polyuria lasting about one week.

One and a half hours after Ewald's test meal, between the attacks, there was free hydrochloric acid 10, with a total acidity of 40. Seventeen hours after a meal, during the attack, there was

only a trace of free hydrochloric acid, with a total acidity of 30. The diagnosis was periodic vomiting of Leyden.

There being no pathological condition found, excepting hypoacidity, the patient was first given dilute hydrochloric acid, fifteen minims before meals. This increased the irritation and was discontinued. Syntonin was prepared by mixing two drachms of diluted hydrochloric acid with the whites of three eggs. This agreed with the patient, but had no effect on the periodicity or frequency of the attacks. Lavage, electricity, hydrotherapy, and all general methods were of no avail. Morphine alone gives relief, but is without any effect upon the duration of the attack.

Case 5.—J. A. G——, aged 45. The family history is negative. Has been married twenty-five years, and has two children. He has had stomach trouble for ten or fifteen years, but previous to that time enjoyed good health. The periodic attacks of vomiting began two and a half years ago. An attack is often precipitated by drinking cold water at night. Lying upon the left side will sometimes precipitate an attack, as will the taking of cold water during the daytime. Vomiting is rare after a meal, the rejected stomach contents consisting chiefly of mucus and bile. The attacks last a week, the patient vomiting at intervals, particularly at night. The interval between the attacks is about three weeks, although as much as three months has passed without a recurrence. There is no pain or shock, but little nausea, and the appetite during the attacks is variable. The patient weighs 128 pounds. Constipation is always present and is only relieved by medication.

The cardiac area is slightly enlarged, the liver contracted, and the gastric area is within normal limits. The spleen is enlarged, the abdominal veins are distended, but there is no fluid in the abdomen.

One hour after Ewald's test meal there was a total anacidity. The use of the gyromele for fifteen minutes did not give a secretion of hydrochloric acid or ferments. An examination fourteen hours after the meal showed the stomach empty. Large quantities of mucus were removed, and in the wash water a small piece of mucus membrane was discovered. Under the microscope this showed atrophy of glands and marked round-cell infiltration. The red corpuscles numbered 6,880,000, and the hemoglobin 75 per cent. The white corpuscles numbered 9345. On another occasion the red corpuscles were 5,900,000 and the hemoglobin 65 to 70 per cent, with white corpuscles numbering 8400. The first examination was after colonic lavage; the second before. Both of these blood-counts

were made after the beginning of treatment; the one which had been made before was lost. The urine between attacks amounted to 700 cubic centimeters in twenty-four hours, having a specific gravity of 1025 with traces of albumin. The urea amounted to twenty-two grammes, and the total uric acid to 0.455. A few granular casts were found. The urine during the attacks amounted to 850 cubic centimeters; there was no albumin, but a positive reaction for albumose was found. Urea amounted to 10.2 grammes.

An examination by Dr. Casey Wood showed atypical indications of albuminuric retinitis in the right eye; the left was normal. The diagnosis was interstitial atrophic gastritis with interstitial hepatitis and chronic nephritis. The symptomatic diagnosis was habitual vomiting due to the above causes.

The diet consisted of chopped white meats, bread, vegetables, and a restriction of fats. Water was given by the rectum in large quantities, and carbonated waters by the stomach. Peptones and food preparations were found to be useless and were abandoned. Hot sitz baths were used with colonic lavage, at a temperature of 131° F. To improve the motor power of the stomach and prevent stagnation of food, the gyromele was used in conjunction with electricity and pneumatic gymnastics of the stomach. Syntonin, prepared by hydrochloric acid with whites of eggs, was without effect. Strychnine and tonics failed, as did diuretics and hepatic stimulants. Mild laxatives to keep the bowels open were of some value. For this purpose bran seemed to be the most efficacious; liquid vaselin was also of some assistance.

As a result of this treatment there is a gain in weight from 128 to 140 pounds, with general symptomatic improvement. There are only occasional attacks of vomiting, and under treatment the patient is much more comfortable. A cure is not to be looked for owing to the visceral lesions.

MATERNAL IMPRESSIONS.[1]

BY JAS. G. KIERNAN, M.D., CHICAGO,
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Fiction, and its ancestor, folk-lore, have paid much attention to this topic. Three of the most distinguished masters of modern fiction have, as Fordyce Barker remarks, based incidents on this belief in a way which they would not have done if they had supposed these incidents would be rejected by their readers as improbable. Goethe in "Elective Affinities" describes a case in which strong mental impressions at the time of conception or soon after affected the child. Sir Walter Scott, in "Fortunes of Nigel," explains the extreme horror which a drawn sword always excited in James I. by the brutal murder of Rizzio having been committed in the presence of Queen Mary Stuart before James saw the light. The theory of maternal impressions is the groundwork on which is constructed "Elsie Venner," that remarkable novel by Oliver Wendell Holmes.

Sir Walter Scott in "Redgauntlet," as Theophilus Parvin points out, further avowed his faith in the influence of maternal impressions upon the fetus. The Redgauntlet "horseshoe frown" is continued through several generations. In one of the Grimm's "Fables" a like belief is indicated. "Released," by Elin Ameen, contains a most thrilling narrative anent such impressions. A young wife two months pregnant has a husband working in a factory. An accidental explosion occurs; he is killed, and his mangled body, every limb and feature torn out of recognition, is brought home. She swoons at the shock. Seven months after her child (a boy) is born, with one arm and no legs. The mother, dwelling upon the sad fate of her helpless child when she can no longer care for him, determines that she will release him from it. After baptizing him (believing that without baptism the little Hans cannot meet his father Hans in Heaven) she places him in his cradle and suffocates him with a pillow. "No more tears for Hans," she says. Later she is in a prison cell, pining away her life with no hope in this world and (since the priest has told her she must repent, and she cannot) none in the next: "But I released my boy."

Dickens in "Barnaby Rudge" illustrates the result of a maternal

[1] Read before the Chicago Academy of Medicine.

impression. Barnaby is born an imbecile with a horror of blood, because his father's crime is suddenly revealed under circumstances of extreme horror to his pregnant mother. In Charles Reade's "Put Yourself in His Place" the bursting of a grindstone kills a workman, and his unborn child is an imbecile. Hawthorne in the "Scarlet Letter" enunciates (anent Pearl, the daughter of Hester and Mr. Dimmesdale) much the same view of maternal impressions that Dr. Holmes does in "Elsie Venner."

Folk-lore notions dominate more than fiction, however. As science sprung from fetishistic folk-lore, medicine still retains too much of it. No part of what purports to be science is fuller of undue credulity and its natural reaction, undue skepticism, than obstetrics as related to maternal impressions. This is not surprising when it is remembered that obstetrics has retained the most folk-lore of any of the medical sciences. Despite its intimate relation with the science of embryology, the average obstetrician makes less use of this science in explanation of the phenomena of sex and of reproduction than does any other scientist. Pages are annually wasted in medical discussion on sex by obstetricians because of their complete disregard of ordinary embryologic facts. It is not surprising, therefore, that the stamp of fetishism should be upon much of the current notions as to fetal development. Maternal impressions, like all phenomena in nature, were first explained by fetishistic philosophy. Perhaps the most primitive type of this occurs among an Australian tribe anent maternal impressions. This tribe (according to Frazer[1]) has no notion that mankind is propagated by union of the sexes. Indeed, when the idea is suggested to its members they steadfastly reject it. Their theory of the continuation of the species is that in certain far-off times (to which they give the name of Alcheringa) their ancesters roamed about in bands, each consisting of members of the same totem group. Where they died, their spirits went into spiritual storehouses in the earth, the external mark of which was a stone or tree. Such spots are scattered all over the country. Ancestral spirits who haunt them are ever waiting for a favorable opportunity to be born again into the world. When one of them sees his chance he pounces out on a passing girl or woman and enters into her. Then she conceives, and in due time gives birth to a child, who is firmly believed to be a reincarnation of the spirit that darted into the mother from the rock or tree. It matters not whether a woman be young or old, matron or maid—all are alike liable to be thus impregnated by the spirit. It has

[1] *Fortnightly Review*, April, 1899.

been shrewdly observed by the natives that the spirits on the whole exhibit a preference for such as are young and fat. Accordingly, when a plump damsel who shrinks from the burden of maternity is obliged to pass one of the spots where the disembodied spirits are supposed to lurk, she disguises herself as a withered old hag and hobbles bent up double, leaning on a stick, wrinkling her smooth young face, and mumbling in a cracked, wheezy voice, "Don't come to me; I am an old woman."

In the opinion of these savages every conception is therefore an "immaculate" one brought about by the entrance into the mother of a spirit, apart from any contact with the other sex.

Another phase of the same belief is found in Annam,[1] where the spirits of children still-born or dying in infancy are held in great fear. These spirits, called Con Ranh or Con Lon (from *lon*, "to enter into life"), are ever seeking to incorporate themselves in the bodies of others, though after so doing they are incapable of life. Moreover, their names are not mentioned in the presence of women, for it is feared that they might take to these, and a newly-married woman is in like manner afraid to take anything from, or to wear any of the clothing of, a woman who has had such a child.

From this phase of maternal impressions to the midwife phase of "marking" the unborn child, the transition was ready and easy.

That antique part of the medical profession which retains the credulity of the midwife inclines to the old fetishistic, demonologic explanation. This demonologic trend of thought gave place in due course of evolution to a doctrine akin to that held by the mental healers of to-day, which gives an undue value to the influence of mental impressions. Ambrose Paré rose above this demonology despite his Calvinistic training, for he remarks in a critical tone (far above his century in certain particulars, but beneath this as to bestiality): "Therefore in times past there have been some who nothing fearing the Deity, neither law nor themselves that is their soul have so abjected and prostrated themselves that they have thought themselves nothing different from beasts wherefore atheists, Sodomites, outlaws forgetful of their own excellency and divinity and transformed by filthy lust, have not doubted to have filthy and abominable copulation with beasts. This so great so horrible a crime for whose expiation all the fires in the world are not sufficient though they too maliciously crafty, have concealed and the conscious beasts could not utter yet the generation of misshapen issue hath abundantly spoken and declared by the unspeakable

[1] The Child and Childhood in Folk-lore.

power of God the revenger and punisher of such impious and horrible actions. For of this various and promiscuous confusion of seeds of different kinds, monsters have been generated and born who have been partly men and partly beasts, the effigies of a monster halfe man and halfe dogge, another man and goat, a third figure of a pigge, with the head, face, hands, and feet of a man. It is much lèss credible that Divells can copulate with women for they are of an absolute spirituous nature but blood and flesh are necessary for the generation of man! What naturall reason can allow that the incorporeall Divells can love corporeall women. And how can we think that they can generate who want the instruments of generation. How can they who neither eat or drink be said to swell with seed."

This belief in demonology has led to crime in the United States. One monstrosity charged to intercourse with the devil was smothered in a Hungarian Pennsylvania mining district in 1890. It had frontal osteomata which were supposed to be horns.

Many striking instances of this belief as to the photographic influence of mental impressions even now appear on the most casual search of periodic literature. About twelve years ago an Indiana physician of good standing reported the following case (not without some humorous aspects), which clearly illustrates the strong hold this belief has on many otherwise well trained and logical physicians: A beautiful young lady consulted him in December as to cessation of her menses. She caught cold at a dance in September and had not "seen" anything since. She denied intercourse, begged piteously for medicine, but refused to submit to an examination. He gave her a saline cathartic. She returned three days later and reported no improvement, but that she had begun to vomit every morning. For this she was given cerium oxalate and told to report in four days. When she returned at the expiration of this time she complained that she was bloating on "account of cessation of her menses." He refused treatment without examination. Some time thereafter he was called to her in labor. She confessed to intercourse in August, and had been suffering pain for a week. On examination he found a child partially born. An expulsive pain came on, and it was born. On further examination something was found projecting, which when expelled proved to be a fetus double from the waist down. On a space one and a half inches in length was a mark closely simulating a fiddle bow. There were three distinct arms and a tumor resembling a fiddle, the mark for strings, bridge, and everything complete. The umbilical cord was six

inches long. Attached to one end was a fetus destitute of arms and legs; then came the placenta. The patient had intercourse with a man within ten feet of where a fiddler was playing, at whom she was looking while copulating. Soon after intercourse she talked with the fiddler, who struck her in play with the bow, whereupon she took it and tried to play with it.

This case illustrates fully the general impression of how photographically the influence of maternal impressions is exerted on the fetus. The outset of the critical analysis of these cases was marked by that strange mixture of credulity and skepticism which so often mars medical analysis. The whole question was assumed to turn upon the issue whether there was nervous connection between the mother and the fetus. As this was before the days of the neuron, histology disproved any such connection. In consequence a large number of obstetricians became as skeptical as they had been previously credulous, and denied that a mental shock to the mother could in any way affect the fetus.

Despite this incredulity a belief in the influence of mental shock to the mother on the fetus still obtained among the profession.

The question naturally arises as to what justification exists for this wide-spread belief. The logical tendency which has arisen of late to regard any belief widely spread and long believed with respect, requires also a rigid analysis of such a belief to determine the half truth or the distorted truth which it contains. Maternal impressions should therefore be analyzed in accordance with the usual scientific requirement that a given hypothesis to be accepted as correct must not only explain all the facts but must exclude every other explanation. Will the average report of photographic maternal impressions stand this test? At the outset a test urged by the skeptics as to maternal impressions must first be applied. It has been asserted, not however by zoologists, that maternal impressions do not occur among the lower animals. A marked case, however, exists, specimens to illustrate which, shown by Professor Gray to the British Zoologic Society, are still preserved in the British Mnseum. These are specimens of "newly-hatched chickens with a curved beak like a parrot and the toe set back as in that bird. The hens in the yard where these monstrosities were hatched had been frightened by a female parrot which, having escaped, fluttered among them before the eggs were laid, and greatly frightened the hens from whose eggs the malformed chickens were hatched." This would seem *prima facie* to support the photographic theory of maternal impressions, but the fact is that these malformations are

simply arrests of development. Birds are regarded by zoologists as aberrant reptiles, for which reason Huxley included the two under the general group Sauropsidæ. During the period of development within the egg, the fetal chick passes through a reptilian phase, and at the close of this period begins to assume the more strictly avian characters. The conditions of toe and beak referred to are passed through at this stage, and if owing to some cause or other development is partially arrested, the result may be such as was seen in the abnormal chickens alluded to above.

This case, however, indicates that mental shock can so check development as to produce arrest at a certain phase in embryogeny. In the case of man the fetus exhibits very decided reaction to sensory impressions on the mother. Féré reports several cases of women who often in the midst of an ordinary dream producing but very moderate excitation, not generally interrupting sleep, were awakened by fetal movements. The dreams had nothing of the nightmare influence of a terrifying idea. They were merely the ordinary phenomena of sleep. Mental changes of the mother hence excite motor reaction in the fetus, and as with sensorial excitation these reactions are stronger in the fetus than in the mother. The mechanism of these motor reactions is, as Féré points out, obviously due to unconscious involuntary movement of the muscular walls of the womb.[1]

FIG. 1.—"Bull fright" (maternal impression).

That maternal shock can exert an influence on the fetus there can be, therefore, no doubt. The question, however, as to the fact of this influence, its method of action, and its results, must be determined by an analysis of the period of pregnancy at which the shock is charged and the result. In the case illustrated (Fig. 1) the malformation presents features which might readily form a basis for a myth like that of "Europa and the Bull," or that of the extravagant nymphomaniac antics of Pasiphæ, which produced the "Minotaur." The neighbors attributed the peculiar appearance of

[1] Sensation et Mouvement.

the infant to a fright by a bull which occurred at the eighth month of pregnancy. The bull-like face in this case is the result of an arrest of development at a much earlier period than the eighth month, and is the consequence of errors of development during the first month of fetal life.

FIG. 2.—"Circus monster" (maternal impression).

In the second instance (Fig. 2) the birth of a double monster was attributed to a fright during the seventh month of gestation at a picture of a double-headed monster in a traveling show. The case seems also to illustrate superfetation, but of this there is no evidence. It is perfectly clear that a fright at this period of gestation could not have produced such a condition, as a short study of the production of double monsters artificially would show. The influence would have to be exerted soon after the appearance of the germinal streak in order to have such effect.

The next case (Fig. 3) is a cyclops. Cyclopia is the result of arrested development of the ordinary pair of eyes and undue development of the median pineal eye; the latter condition being still persistent in some lizards. Dareste has shown that the production of such a monstrosity is associated with other important teratological changes, such as atrophy and displacement of the olfactory apparatus, changes in the structure of the mouth, and arrest of develop-

ment of the cerebral vesicle, the determining causes of which must be exerted very early in the life history of the embryo. In this case the mother, who was a girl of 17, read a work on Africa when in the eighth month of pregnancy. This was followed by a dream about animal monsters, and to this dream was ascribed the monstrosity. It is obvious that the dream exerted no influence whatever in bringing about the fetal monstrosity, which must have occurred back of it seven months at least.

FIG. 3.—"Book shock" (maternal impression).

The next illustration (Fig. 4) is that of a meningocele which occurred in a child whose mother at the eighth month of pregnancy was shocked by a case of hydrocephalus. Here the alleged cause might have produced the meningocele not through a photographic effect, but because of the way the shock to the mother affected her circulation, through it the circulation of the placenta, and through it the intracranial pressure

FIG. 4.—"Hydrocephalus" (maternal impression).

of the child. The influence of mental shocks must therefore be taken into account even though they may not produce the photographic consequences ascribed to them.

Profound shock, destitution, and want of food act on the mother, and may influence the fetus deleteriously. Hence the significance of the fact that of ninety-two children born in Paris during the siege of 1870–71, sixty-four had slight mental or physical anomalies; the remaining twenty-eight were all weakly; twenty-one were weak-minded; and eight were subjects of moral imbecility. In Berlin the financial crisis of 1875–80 was followed by an increase in the number of idiots born. Not only do poverty and want produce anemia and malnutrition of the fetus, but profound shock disturbs the whole bodily metabolism. The nutrition of the mother may thereby be so disturbed as to result in a partial toxemia, which would tend to check or disturb the healthy development of the fetus *in utero*. In this way a nexus of cause and effect can be traced, but facts which can be thus explained give no support to the view of maternal impressions popularly entertained.

THE REPAIR OF OLD TRAUMATIC NASAL DEFORMITIES.[1]

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As the caption indicates, I refer to but a very limited class of cases, yet I believe that class to be quite as frequently represented in our practice as rhinological surgeons as is the one requiring a rhinoplastic operation because of the destructive inroads of syphilis or malignancy.

A reference to the literature on this subject would, I apprehend, rather lead the observer to the conclusion that it is quite the universal rule to have an immediate and satisfactory repair of nasal fractures and displacements. Indeed, few of the recent presumable authorities, in their volumes on either general surgery or the specialty, even so much as recognize the condition by a mention of its existence; and those who do mention it fail to give any suggestions as to the technique. This may be accounted for in a large measure by the fact that each and every case of this character must of necessity be a rule unto itself, and to deal with it successfully requires not only a dexterity in technique as good as the average, but, what is much more important, an ingenuity in devising the means, and of adapting those means to the best possible advantage, for the case in hand.

It has been the popular surgical practice in many cases of severe nasal deformity to employ a combination of both extranasal and intranasal surgery for its repair. While this combination may perhaps render the case less difficult in its performance, yet it is doubtful if satisfactory physiological results are more certain to follow on that account. However, the cosmetic element enters so largely into the modern practice of surgery that we cannot overlook it, when by the employment of intranasal methods we are able to get as good results physiologically and to avoid the unsightly and most undesirable cicatrices almost necessitated by the extranasal work.

Owing to the natural variations in the physiognomy, as well as to the fact that each deformity will vary from every other one in so many particulars, any attempt at surgical correction of this deformity must be necessarily varied from the general rule of technique to suit the peculiarities of that special case.

It is a well known fact that fractures of the nasal bones are not as a rule given that consideration which the importance of the case demands. Recent nasal fractures are usually very satisfactorily

[1] A thesis read before the Chicago Academy of Medicine, April 13, 1900.

treated by the proper application of surgical and mechanical scientific principles; though too often they are looked upon as an insignificant matter. Moreover, often in cases of nasal fracture the pieces may be perfectly adjusted at the first dressing, and either some slight accidental pressure during sleep, or the natural resilience and elasticity of the septal cartilage, may displace the fragments so completely that a permanent deformity inevitably results.

I do not believe that the surgeon is justified in any case in a simple readjustment of the parts of the fracture, without the application of some sort of support until temporary union has taken place, such support to be either external, internal, or both. This laxity of duty in the application of surgical principles may be in a measure due to the fact that the nose is a sensitive organ and somewhat difficult to thoroughly examine even when uncomplicated by a fracture. The extensive tumefaction which ordinarily occurs quite promptly after an injury, along with the free hemorrhage, completely obscures the real extent of the impairment. Thus it remains until too late for immediate repair, and demands sooner or later surgical interference for both physiological and cosmetic reasons.

In a large proportion of the cases of traumatic nasal deformity there is not a destruction of tissue, but rather a displacement of tissue with the consequent hypertrophy present.

Rhinoplasty, as an operation, dates back to the earliest days of surgical history; and strange, too, as it may seem, this particular branch of surgery appears to have been much in advance of the practice of the art in other departments.

Case 1.—A. E. B——, aged 37, when 14 years of age was kicked in the face by a horse. The injury was an extremely severe one, thoroughly fracturing the nose and lacerating the soft parts of the face extensively. It was several hours after the injury before he received surgical attention, and the physician who attended him is reported to have said that there was too much swelling at the time to secure a good adjustment of the bones of the nose. However that may have been, it seems the readjustment never was attended to, and when the patient presented himself at my office in August last I found the following rather anomalous condition present:

The external examination showed a completely depressed bridge from the columnar cartilage to the frontal bone. On either side of the face directly over the nasomaxillary junction there was an apparent exostosis about the size of a nickel and twice as thick. Between these two prominences was a depression which was soft and yielding to pressure, showing, in all probability, the absence of

the perpendicular plate of the ethmoid. As might be expected, the tip of the nose was unduly prominent, with a decided "pug" tendency. The alæ were normally broad, and the consequent distortion of the features was the more marked.

Internally an even more interesting condition was made manifest. The cartilaginous portion of the septum was entirely destroyed back of the columnar cartilage, a soft, flabby, perfectly flexible tissue being present in its place. Remains of the inferior turbinated bones could be detected on either side, but the entire nasal respiratory channel, even after the application of cocaine, was not larger than a lead-pencil. The postnasal hypertrophy almost filled the space at that point. The evident distortion of the normal parts and their respective relations made it extremely difficult to determine with certainty just which prominences had been any particular part of his nasal anatomy. My conclusions were that the force of the traumatism had parted the nasal bones, and at the same time the perpendicular plate of the ethmoid had been broken.

The patient had allowed the condition to go without treatment for many years, in a large measure because of his objection to what he termed "an unsightly scar." This to him was as bad as his distorted nose itself. I consequently, for reasons before mentioned, determined upon an attempt at subcutaneous operation primarily for the sake of avoiding a cicatrix.

By means of a long narrow chisel and a strong Adams septum forceps, operating through the nares, I was able to quite thoroughly break up the mass of bone on either side into several pieces. In this breaking-up process my chief aim was to leave each piece attached with as much tissue as was possible. After thus macerating the parts I did not find it difficult to bring them well over toward the median line. This being accomplished I then adjusted my splints as follows: The outside brace was constructed as shown in the illustration (Fig. 1). A spring-copper band one and a half inches wide encircled the head anteroposteriorly. This was supported and steadied by a T being placed at either end, the ends of the T's being united by an adjustable strap. To the T in front was attached a pair of fin-like malleable strips, shaped to fit the nose, set on a swivel and adjustable by a set-screw. It will be observed that this brace has the advantage not only of holding the parts well in position, but also of preventing any lateral deflection of the nose as a whole during the process of repair; thus being an improvement upon the various metallic or plaster-of-Paris devices which have been suggested for the purpose. It is lighter in weight and much less cumbersome than any one of the means heretofore devised.

FIG. 1.

Internally, I first introduced on each side a small spring wire, the form of which will be seen in the lower right corner of Fig. 1. This was patterned somewhat after the suggestion of Dr. Roe, of Rochester. This spring wire is bent so that the one arm will lie along the floor of the nose, and the other act as a support to the nasal bridge from the tip of the nose to the frontal bone. These springs were anchored to the lateral incisors to prevent slipping backward toward the pharynx and to maintain the object of their introduction. This support of the nose was further reenforced by the introduction of a pair of snugly fitting Mayer nasal tubes. These not only supported the nose, but served as well to enlarge the respiratory channel, as was preeminently necessary, while the pieces were becoming firmly fixed in their new relations.

In order to overcome the decided "pug" appearance I exsected a V-shaped piece from the columnar cartilage and the skin, drawing the edges together with several fine stitches. This, the only external wound in the operation, healed by first intention.

There was no rise in temperature after the first day, and less pain than was to have been expected; with but little swelling of the parts

so roughly handled. There was no suppuration at any time. The ordinary rules of surgical treatment were carefully followed during the healing process. The adjustable features of the external apparatus were found entirely practical and valuable. Though for some days pressure necrosis was feared from the splint, it was, however, fortunately avoided.

An examination two weeks after the operation revealed a patulous opening into the pharynx sufficiently large for free breathing, and as well a mucus-producing surface certainly more than twice as great as it was before the operation. But there was yet a portion of

FIG. 2.

the septum between the columnar cartilage and the new nasal bones which was soft and flabby, yielding to slight pressure. This I feared would later relax and form a pit in the bridge of the nose at that point. Fortunately there was an enchondromatous elevation near the base of the septum on the right side. By a simple plastic operation I utilized this bit of cartilage very profitably in stiffening the septum.

The springs were removed on the tenth day. The nasal tubes and the truss splint were kept on for two weeks longer, then temporarily removed at lengthening intervals for the following two weeks, at the end of which time repair was complete.

A very fair idea of the results obtained in this case will be gained by a reference to Figs. 2 and 3. That so satisfactory a result will be permanent I have at present no reason to doubt. The extremely disagreeable features consequent upon many years of mouth-breathing have disappeared in even a larger measure than was promised the patient under the most favorable circumstances.

Case 2.—Miss V. C—— was referred to me in September last on account of a marked traumatic nasal deformity. The nature of this injury will be plainly recognized by a reference to Fig. 4. The injury was caused by being throwu from a carriage during a runa-

FIG. 3.

way in the summer of 1895. This cut is from a photograph taken almost four years ago for a surgeon who intended correcting the deformity at that time, but who was attacked with a fatal illness before the time of operation.

An examination of the patient showed a dislocation and displacement of both nasal bones and the perpendicular plate of the ethmoid, which dislocations also of necessity produced a marked deflection of the septum. There was, however, no separation either between the nasal bones or between the bones and the septal cartilage.

My method of operation in this case was as follows: Two days before the radical operation, under local anesthesia I plowed a deep

groove with the nasal hurr at the base of the perpendicular plate of the ethmoid on the right side, as near as was possible to the point of former fracture. At the next sitting general anesthesia was given, and with the long, narrow chisel already referred to I separated both nasal bones from their maxillary attachments, with the least possible destruction of soft tissue. From the maxillary edge of the right nasal bone I first removed a small, narrow piece; this gave room for the more convenient return of the bones to their normal position. I then made a perpendicular incision through the septum at its greatest convexity, thus combining, in effect at least, the Asch operation with the replacement of the nasal bones. I was then able to release the nasal bones from their attachment to the maxillary bones without separating them from one another.

FIG. 4.

The application of the Mayer tubes inside, and the brace above described outside, was made the same as in the former case. These dressings were kept in place for four weeks, at the end of which time the results were entirely satisfactory, perfect union having taken place, and the septum being unusually straight. The nose is quite normal in appearance and functional activity, though slightly broad at the base (Fig. 5).

This operation is evidently applicable only to those cases arising from a traumatism. I do not fail to recognize the ability and originality of eminent surgeons in the line of the repair of congenital nasal deformities, nor the demonstrated possibilities of rhinoplastic surgery. There is, however, a self-evident distinction between the three conditions.

FIG. 5.

In these cases the nasal cartilage is necessarily much displaced and contorted; there is also frequently a cicatricial or enchondromatous condition about the point of injury. These deformities should be considered quite as important in the restoration of the bony framework as is the replacement of the bones themselves, for if the resiliency of this cartilage is not destroyed at the time of operation, it is almost certain to displace the new adjustment of the pieces of bone loosened by the chisel.

I claim for the operation only the application of well known surgical, physiological, and mechanical principles, which I believe, in a large measure, to be new in their application, and at the same time most promising in results.

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ETHER ANESTHESIA FROM A MEDICAL STANDPOINT.

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While the average man is never in a position to study anesthesia by means of physiological experiment with make-believe animal patients, whose bodies have been tapped in every direction for the attachment of meters, and if at some time in his career nearly every man begins to make records of the exact amount of the anesthetic used, the time of operation, etc., etc., nearly always in the abstraction and anxieties of professional life his notes are lost, and his conclusions laid aside without being committed to paper. With the attention concentrated upon a single patient, the physician administering an anesthetic has much time for thought on the subject and crystallization of his ideas.

There are three acts in the drama. During the first act there are on the floor as actors the patient, the physician about to administer the anesthetic, the anxious friends, the surgeons, and the nurses. During the second act the patient is comatose, the friends have gone away, the nurses and surgeons are abstracted with their work, and the person giving the anesthetic is completely in command of the field. During the third act the physicians have departed, the patient is recovering from the anesthesia, and the sympathizing friends have returned to the scene.

We can treat of anesthesia in these three stages. During the first there is a great deal to be attended to besides the mere administration of the anesthetic. One must investigate his patient, examine his heart, obtain the history of previous anesthesias, must reassure the patient and the friends, and inquire about false teeth with sufficient tact not to offend the patient. Then comes the question of starting the anesthesia without frightening the patient. Every one adopts his own plan to accomplish this object. A very useful one is to saturate the cone thoroughly with ether before approaching the patient, and then assure him that you will not commence to administer the ether before he becomes entirely accustomed to the odor. Hold the cone above the face eight to ten inches, and keep it thoroughly saturated; the ether vapor, being heavier and colder than the air, will fall directly upon the patient's

face, but he will stand the sensation of suffocation better than if the cone is closely applied. In this way the patient gradually becomes accustomed to the ether, partial insensibility of the mucous membrane is produced, and the patient comes somewhat under the effects of the anesthetic, so that the cone can then be lowered. In very nervous patients it is sometimes useful even to let them hold the cone themselves. The cone is now gradually approached to the face. When the cone is down, the patient not being under the influence, it is right to encourage deep breathing. It has been found very useful to tell the patient to "cough into the machine," because he is more apt to do this than to breathe if told to do so, and it accomplishes the same object.

As to the quantity of ether to be administered no definite rules can be given. Most men give a great deal more than is necessary. If a patient is put thoroughly under in the early part of an operation, very little additional is required to keep him under for a considerable length of time. There is one danger that has never been sufficiently emphasized, and that is the possibility of doing insidious damage to a patient by having him at some stage during an operation too profoundly anesthetized. I always think of the effect of such an occurrence upon the nervous system as such as might be produced by a blow on the abdomen or as a condition of shock. It would seem that many of the ultimate bad results of ether might be accounted for by such an interference of innervation of different parts of the body, such as the kidneys. This too profound anesthesia may happen without attracting the attention of a careless etherizer or any one else, and the results may not be apparent except in a subsequent condition of shock or suppression of urine. These remarks refer to every case. There are exceptional cases in which one is called upon to administer an anesthetic under extremely difficult circumstances, notably upon patients almost moribund for operations of last resort, and secondary operations undertaken very soon after a previous anesthesia. In these the circumstances and surroundings are very trying. The surgeons, not being infallible, are apt to be more or less nervous.

It becomes the duty of the anesthetist to estimate from moment to moment the vital condition of the patient. If the operation is to be abandoned at any moment, it is he who must first give the warning. The surgeon's attention being concentrated upon the rapid and successful completion of perhaps a difficult abdominal operation, he cannot watch the condition of the patient, and is more conscious of any movements that interfere with his work than of the flagging

pulse constantly held by the anesthetist. Under these circumstances many times a conscientious man must disregard the complaints of the operator that the patient is not sufficiently under, and using his own judgment give just sufficient ether to allow the operation to proceed. I have often seen a nervous surgeon unconsciously bully a timid etherizer into doing his patient a great deal of harm by the excessive use of the anesthetic in these very critical cases, so much so that long ago I formulated the belief that in extremely critical cases one must be prepared during the operation to disregard commands to give more ether from one who has no present knowledge of the amount of ether already given, and but little knowledge of the pulse and respiration. There is one compensation for this course that has often fallen to my lot, and that is that after the successful completion of a very critical operation the surgeon has appreciated the justness of this course, and has been louder in his praises than he formerly was in his complaints. It would seem that a surgeon should not ask an unqualified person to administer an anesthetic in a critical case, and when he has asked a competent one he should not dictate details of the administration unless he has followed all the details of the anesthesia. He has a right to say that if compatible with the safety of the patient he would like to have the anesthesia deeper, but to direct a larger dose of ether without a knowledge of the conditions would seem wrong.

It is not my purpose to discuss anesthesia except in a general way, but the management of the tongue is often a source of much worry. The routine practice of doing something to keep the tongue out of the throat is entirely unnecessary. In most cases the tongue never gives any trouble. A good general rule is to listen carefully to the breathing to ascertain whether there is any obstruction in the throat. So long as the air enters and leaves the chest with freedom the tongue can be let alone. If it gives trouble, lifting the angles of the jaw in the usual way is sufficient in most cases. Once in a great while, in a stout, short-necked individual, extreme measures, such as the tongue forceps, or even a ligature passed through the tip of the tongue, may be necessary. Much of the obstruction caused by mucus in the throat can be avoided by turning the head upon the side, and will never become dangerous unless the anesthesia is deeper than is necessary under ordinary circumstances.

During the stage of recovery the chief annoyance, of course, is nausea. It has long seemed that this would be to a large extent avoided if the anesthesia had never been so deep as to be a shock to the nervous system. This vomiting is certainly a nervous condition

to a large extent, and it has been found very rare in cases where the degree of anesthesia has been very carefully regulated. No two patients are exactly alike in the manner in which they take an anesthetic. I have met with many interesting variations, which will form the subject of a subsequent account.

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TALMUDIC AND JEWISH MEDICINE.

BY LAWRENCE IRWELL, M.A., B.C.L., BUFFALO, N.Y.

Throughout the middle ages in Europe and in the East the science of what we now call medicine was in the hands of the Jews. We find at Bagdad, at Paris, at Vienna—and even in the Vatican—a Jew installed as the physician of both Prince and Pope. Moreover, the faculties of medicine in the universities sprang from Jewish schools. Many of the Hebrew doctors, in spite of their religion, were held in the highest esteem, and were the authors of important works, some of which are still extant, and contributed in their own way to the emancipation of the science of pathology from superstitious methods.

At a very early period medicine was practiced among the Jews, and the words of the author of the book Ecclesiasticus, who probably lived 190 years before the birth of Christ, show in what esteem the medical profession was held: "Honor a physician with the honor due unto him for the uses which ye may have of him: for the Lord hath created him." The words that follow lead us to suppose that even at this early date the Jewish doctor had secured a recognized position in the oriental courts: "He shall receive honor of the king. The skill of the physician shall lift up his head: and in the sight of great men he shall be in admiration."

It is a remarkable fact that the son of Sirach—the writer of the book Ecclesiasticus—in the account of the physician confines his commendation to legitimate practice, as we should now term it; and gives no countenance to the astrological quackery which was, at this period, so largely imported into the art of healing. He says: "The Lord hath created medicines out of the earth; and he that is wise will not abhor them. Of such doth the apothecary make a confection."

That wrong-doing and sickness were intimately connected seems to have been a notion from an early age. When the blind man was healed by Christ, the question was asked whether he had sinned or his parents, that he had been born blind; and the instruction given to the sick to "leave off sin, and order thine hands aright, and cleanse thy heart from all wickedness;" and after that, "Give place to the physician for the Lord hath created him: let him not go from thee, for thou hast need of him. There is a time when in their hands there is good success."

In later times a sect among the Jews made the practice of medi-

cine one of its main objects; this was the sect of the Essenes and Therapeutæ, of whom Josephus and Philo give such curious accounts. Josephus relates how he saw a possessed man healed in the presence of Vespasian by one of this sect, named Eleazar. The method, however, seems to have been superstitious. He introduced a certain root into the nose of the afflicted man and pronounced the name Solomon, together with some magical formulæ.

Akiba was a physician of repute, after the fall of Jerusalem. He was tortured to death by the Romans about 135 A. D. He appears to have been the first to explain that just as weeds grow in a field with good seed, so are the elements of disease in the body of man along with the principle of health; and that, as God gave the tiller of the soil the work of cleaning the ground of weeds, and caring for the good seeds, so did he send the physician to eradicate the evil from man's body, and encourage the growth in him of vigor and vital force.

The Talmud gives us an insight into the medical practices of the Jewish physicians, and we see that although there was much that was absurd and superstitious, there was nevertheless some sound principle, and an attempt to ascertain the origin of disease.[1] What is specially worthy of note is that the physician Samuel, who died in the year 243 A. D., devoted himself to dissection, and at his death left a sum of money for the purchase of corpses to be used for anatomical research. Such studies could not be prosecuted at this period in the world's history without great danger, as the "common people" were almost certain to become alarmed, and were likely to persecute—if not to murder—a Jew who explored the construction of a dead body.

Abba Oumna was a physician of the fourth century, and a man of great nobility of character. He would not take a fee with his hands, because he feared discouraging poor sick people from visiting him, as they might think that he would not care to attend to them if unable to pay him a liberal fee. He adopted the plan of a box with a hole in the top, and every patient put into it whatever sum he liked. The box was placed in what we should now speak of as "the outer office." Perhaps the most striking story told of this physician is the following: Two students of physic from a distance called upon him and asked to be allowed to stay the night at his house. He acceded to their request, and gave them a room in which there was a handsome rug upon the floor. Next morning they took

[1] Schwab's translation of the Jerusalem Talmud into French (1871) is the only satisfactory work.

the rug to a store and tried to sell it! While they were bargaining with the proprietor of the second-hand shop—what was then known as a bazaar—Oumna happened to pass by, and seeing the rug, but not recognizing the boys, he asked the price of it. He was requested to make an offer. He named what he would give, but one of the purloiners told him that the amount was too small. "Not at all," said he, "that is the price that I paid for a similar carpet." Then the students told him that it was his own property which they had carried away, and they asked him if he did not consider them a pair of scoundrels.

"Not at all," answered Oumna. "A child of Israel never judges anybody by a first offense. I will buy back my carpet, and do you give the money to the poor." This method of treating a gross breach of hospitality—to say nothing of theft—could hardly be recommended at the present day.

When Oumna was consulted by very poor persons, after their recovery he was in the habit of giving them money, at the same time saying: "Now go—get you bread and meat; those be the best doctors to attend on you henceforth."

The remedies scattered through the Talmud have been collected in a curious work by Günzburger, published at Göttingen, in Germany, in 1743 or 1745. Although I am not a physician, I think I may safely say that most of them are no longer regarded as valuable, as they are not known to the Pharmacopœia. I now propose to leave the Talmudic period of medicine with a quotation: "There is a cure for all sickness if the stomach be clear; for all aches and pains if the heart be not affected; for all troubles if the head be not attacked; but there is no relief from a bad woman!"

An immense destruction of medical books, as well as of others, took place when the Arabs conquered Persia in 639 A. D.

Saad, son of Abu-Wakkas, wrote to the Calif Omar to know what was to be done with all the books that had come into his possession. "Throw them into the river," answered Omar. "If they are good for anything, Allah can and will direct us without them; if good for naught, the sooner got rid of the better."

Bassorah[1] became a great school of medicine among the Jews, and Omar himself thought it advisable to call to his aid the famous Jewish physician Abu-Hafsa. The Calif Moawiyah I. encouraged the translation into Arabic of Hebrew tracts on the science of healing. The Bassorah school was moved to Bagdad, and from this school came Isaac-ben-Amram, a native of Damascus. He was

[1] The modern Basra in Asiatic Turkey, 56 miles from the mouth of the Euphrates.

called in to attend the Emir of Caironan, and found that a Christian physician was also in attendance, who opposed everything that he recommended. Thereupon Isaac withdrew, saying: "Disagreement among doctors is worse than tertian fever."

Isaac-ben-Solomon, or Abu Jakub, as he was called, was a disciple of the former Isaac, and was born about 832 A. D. Some one said to him in his old age: "Are you not sorry that you leave behind you no children?" "Not at all," answered the physician. "I leave what is better than children — my treatise on fevers." Another version of the story is that he valued his eighteen volumes —one a treatise on Philosophy, others on Religion—higher than a family of children.

At Salerno, Italy, was a famous school of medicine, and many eminent Jewish physicians were educated at it. The school was founded by the Greeks and Saracens, and at one time in it Pontus taught in Greek, Abd-allah in Arabic, and Eliseus in Hebrew. It was through the Jews that the knowledge of medicine penetrated among the Arabs; and it was from the Saracens in Spain that the knowledge of medicine came to the Christians in Europe, where Montpellier, in France, became the rival medical school to Salerno. But, unfortunately, the physicians of the ninth and tenth centuries had departed from the wise teaching of Samuel, who had encouraged the learning of anatomy by dissection. They came to regard the examination of the human body after death as a sort of sacrilege, and despised surgery as an ignoble profession. In the eleventh century, however, medicine made considerable strides. "The oriental tongues," says Cabanis, who wrote on The Revolutions of Medicine in 1802, "were familiar to the Jews, and from the time when Galenus and Hippocrates and the other masters of medicine were known only through Arabic and Syriac translations, the Jews alone knew how to treat the sick with some sort of method, and to make a practical use of the labors of antiquity." In fact, the profession of medicine became a specialty of the Jews. Every prince and every prelate had his Hebrew physician, who was thus at times drawn into controversy involuntarily. Anselm, of Treves, who wrote in the year 1050, says that the Emperor Henry III. had a Jewish physician, and that this man and Wazo, Bishop of Liege, had often arguments with one another concerning certain passages in the Bible. One day the physician bet one of his fingers that he could defeat the Bishop in argument. According to Anselm, he lost his bet, and then held out his finger to Wazo to have it amputated. The Bishop laughingly told him to keep it in trust for him till he claimed it.

Ibn-Zohar was born at Penaflor, in Spain, about 1070 A. D., and began to study medicine when he was ten years old. His father made him solemnly swear never to allow himself to be persuaded to use poisons, for at that time Jewish physicians were in repute, not only for healing purposes, but also as being able to remove persons who were obnoxious. He was named house physician to Ali, king of Seville; and he had the ill luck to cure the king's brother, whom Ali had caused to be poisoned. In revenge for this he was thrown into prison and languished there till Jusuf, Prince of Morocco, drove Ali from his throne. Then he recovered his liberty and entered the service of his deliverer.

The most eminent Jewish physician of the twelfth century was Moses-ben-Maimon, or Maimonides, as he is usually called. He was born in 1135, and became a magistrate of Cordova. In 1160 he was forced to embrace Islamism, but fled at the first opportunity, and took refuge in Egypt, where he became physician to several of the Sultans. In one of his letters he complains of the severity of his duties, for if one of the children, wives, or servants of the Sultan was sick, he was detained in the palace till this member of the household had recovered. He was required to visit the palace every day, and as he lived three-quarters of a league (about a mile) from Cairo, his time was by this means greatly taken up. On his way crowds of Jews and Mohammedans lined the road, and he had to attend to and prescribe for all. His consultations continued till late at night, and till he would almost fall asleep in a standing position. Among the numerous works left by Maimonides is one on bronchitis.

In Bagdad there lived during the twelfth century a famous Arabian physician who lectured to Arabs. Neither Jews nor Christians were permitted to attend his lectures. A young Jew, Ebat-Allah, being most desirous of instruction, induced a servant to hide him in the lecture-room, and in this way he attended the course for a whole year. One day the professor was asked a question on medicine by a pupil, which he could not answer without consulting his notes. While he was doing so Ebat-Allah shouted forth the reply from his hiding-place. He remembered having heard the facts in a previous lecture. He was brought from his place of concealment, and the teacher, upon questioning him, was astonished to find that he knew more than all the rest of the class. He afterwards became famous, was appointed physician to the Calif, and acquired the title of "The Unique." He deserted the faith of his fathers for Mohammedanism, and was bitterly reproached for being a renegade by a

fellow physician at court, who was a Christian. He died in 1164, blind, deaf, and in abject poverty.

Abu Bekr Mohammed Ibn-Zohar was a Jewish doctor at the court of Jusuf, Prince of Morocco. One day the Prince, hastily entering his physician's room, did not find him there, but on the table were some Arabic verses in his handwriting, blotted with his tears, in which he bewailed his loneliness, separated from his wife and children, who were at Seville. The Prince went away, and without a word to Ibn-Zohar, wrote to the Governor of Seville to send over to Morocco the family of the Jewish doctor. When they arrived Jusuf gave them a fine residence, and then sent his physician there, saying that he would find in that house certain persons who had long suffered from heartache, whom he wished him to cure.

In 1246 the Council of Béziers forbade Christians having recourse to Israelite physicians; and the Council of Alby in 1254 condemned the use of any medicines made from Jewish prescriptions.

The faculty of Paris was unquestionably jealous of the favor in which Hebrew doctors were held, for in 1301 it issued a decree forbidding men and women of the religion of Moses from exercising the duties of a physician toward any person of the Catholic religion. In Spain, also, several decrees of councils were launched against the Jewish doctors, and against Christians employing them. The same was done by councils at Avignon in 1326 and 1337; but these canons seem to have been ignored. The sick insisted upon calling to their aid the men who were considered the most capable practitioners, regardless of their nationality and the religious faith which they professed. At Montpellier some priests succeeded in excommunicating certain persons who ignored their injunctions to abstain from recourse to Hebrew doctors, who, they said, were unqualified to act, not having received degrees at the university in that city. James, king of the island of Majorca and Count of Roussillon, by letters patent forbade the practice of medicine by the Jews, unless they had undergone what we should now call "a licensing examination." These letters were confirmed by Phillip VI. (of France) in 1331.

At the beginning of the fourteenth century a furious controversy raged among the Jewish physicians concerning the value of an amulet with the figure of a lion on it which was in vogue and had been employed by Isaac de Lattes. The discussion was interrupted by the expulsion of the Jews from France in 1306. Many of them, however, were received into favor by Charles II., King of Naples, but great numbers of them were dispersed throughout Europe and

died of starvation. In 1368 the Council of Lavaur, in Languedoc, renewed the canons against the practice of medicine by the Jews; but King John II. of France took them under his protection, and, by a decree issued in 1362, empowered them to practice both medicine and surgery, if they had passed a qualifying examination. Under this decree the Jews held their own to the end of the century. I must not omit to mention the successful operation for cataract performed by Abibar, a Jewish surgeon, in 1468. His patient was Don John II. of Aragon. In 1492 Ferdinand and Isabella banished all Jews from Spain. The Popes Eugenius IV. and Nicholas V. forbade Christians from calling to their assistance Hebrew physicians, surgeons, and apothecaries. Their successors, however, did not share their intolerance, for Paul II. (1464–1471) exempted them from wearing the red gabardine which marked those of their race and religion. Julius II., who was Pope from 1503 to 1513, had a private physician who was a Hebrew; so had Leo X.—the celebrated Bonnet de Lattes. Both Paul III. and Julius III. had medical attendants who were of the Jewish race. Some of the Hebrew Italian physicians translated Arabic treatises into Latin, and thus materially assisted in the diffusion of medical knowledge. In 1555 the imperious Pope Paul IV. forbade the practice of medicine by Jews; and as this papal bull was disregarded, it was renewed by Pius IV., and then by Gregory XIII. (1581). Sixtus V., however, reversed these decisions by a bull issued in 1586, in which he accorded full permission to Israelite doctors to attend Christian patients.

This article, being in reality a compilation, cannot, of course, contain anything that can properly be described as "original." It is, however, an attempt to give facts that do not appear to have found their way into print in our language. For some of the information embodied in this paper I am indebted to an interesting article entitled "The Jew in Medicine," by Dr. Julius Ullman, published in the *Buffalo Medical Journal*.

BOOK REVIEWS.

PROGRESSIVE MEDICINE. Edited by Hobart Amory Hare, M.D., Assisted by Charles Adams Holder, M.D. Vol. I, March, 1900. Philadelphia and New York: Lea Brothers & Co. 1900.

The current volume, which consists of 428 pages, deals with surgery of the head, neck, and chest, infectious diseases, including acute rheumatism, croupous pneumonia and influenza, diseases of children, pathology, laryngology, rhinology, and otology. It deals with the same subjects as did the volume for March, 1899, and has the same contributors, excepting that Thayer has been replaced by Packard in the preparation of the *résumé* of infectious diseases.

The editor, in his preface, tells us that a year's publication of Progressive Medicine, with the hearty support which it has been accorded by the profession, has convinced him that an authoritative summary of current medical literature, presented in narrative form, fills a valuable place in medical literature. He is convinced that it is impossible to keep abreast of current medical literature in such a way that its details can be grasped and its practical facts applied at the bedside. An effort has been made in Progressive Medicine to condense the medical literature of the year, sifting the useful from the useless. In a word, it is an effort to describe medical progress in all its lines, by one well qualified. It is not a mere condensation of medical articles, but each subject is treated in narrative form, in which are expressed not only the views of authors cited, but also the opinions of the contributor.

The department of surgery of the head, neck, and chest is contributed by J. Chalmers Da Costa. There is no statement of the more important advances in this department of surgery, but the more valuable articles are operations for trigeminal neuralgia, retained foreign bodies in the brain, methods of opening the cranial cavity, wounds of the heart, and operations upon the breast and thyroid gland. In each of these subjects there has been an active discussion, and not a little progress is to be noted.

Frederick A. Packard, in speaking of the acute infectious diseases, says that our advancing knowledge of bacteriology and the increasing insight into clinical phenomena obtained by this means is growing to such an extent that it is almost impossible to define the limits of this class of diseases. There are a certain number of well defined symptom groups which enable us to divide the subject into special classes in which the cause has been definitely and distinctly determined. These, of course, are what are generally spoken of as the infectious diseases, but there is growing proof that such ordinary illnesses as coryza, tonsillitis, and certain forms of bronchitis should be considered in this class. Within recent years pneumonia has been accepted as an infection, while rheumatism, being a general disease, has been classed among the infections because it had been improperly placed with gout and other disorders of metabolism. In this chapter there is an excellent *résumé* of the transmission of infectious diseases by insects, a subject which is attracting wide attention. As to the use of antitoxin in diphtheria, the author says it seems scarcely necessary to bring forward further statistics in support of the use of antitoxin. Since the introduction of the use of antitoxin the disease has assumed an entirely different

position as regards both danger of its results and the length of its course. One of the longest articles in the volume discusses typhoid fever; to this thirty-three pages are devoted. A brief study of this article will convince any one that this apparently well known and certainly much studied disease still furnishes many knotty problems for solution.

Alexander D. Blackadder says that in diseases of children there is no special disorder to which the new-born are liable, in which there has been any special advance during the past year. He, however, finds a number of papers worthy of special study. The artificial feeding of infants comes in for extended comment and shows that this much discussed subject has been by no means exhausted. Among the later and more striking communications in this department is the relation of the plantar reflex in children as an aid in diagnosis.

Ludwig Hektoen, in the article on pathology, in discussing infection, intoxication, and immunity, says the study of these phenomena progresses vigorously. The humoral and cellular theories are still urged by their respective supporters, although often considerably modified. Many additional details have been brought out illustrating the importance of immunity in healing. It is more and more apparent that no single theory is sufficient to explain all the phenomena observed in infections and intoxications. The resulting processes are subject to variation, both in nature and result. Among the new pathologic microorganisms a sporothrix, first described by Schenck and subsequently identified by Hektoen, is described.

The chapter on rhinology and laryngology is by A. Logan Turner. In it systemic infection of nasal origin is discussed. The most extensive work in this department is the study of the nasal accessory sinuses, and the importance which infection of these cavities bears to infectious diseases of the brain.

A Handbook for Nurses. By J. K. Watson, M.D., of Edinburgh. An American Edition under the Supervision of A. A. Stevens, A.M., M.D. Price, $1.50. Philadelphia: W. B. Saunders. 1900.

The author states in his preface that he has endeavored to supply in one volume all the information needed by nurses in the practice of their calling. In discussing the vexed question as to how much a nurse should know, the author says he is convinced that their reading of medical books is of doubtful benefit, and as it is impossible to prevent the nurse from attempting to acquire a certain amount of medical knowledge, it is better to cull for them what is actually needed. He says: "It is common experience that the more highly cultivated the nurse, the less likelihood of her attempting to usurp the rôle of the medical man; it is the ignorant and badly trained nurse who brings discredit on her nursing sisters." In this criticism on the nursing profession we think the author arrives at just conclusions, as it makes little difference how much a nurse knows, provided she is willing to allow some one else to know more than she does.

The work before us contains 413 pages. It starts off with a very brief description of the circulation, the digestive apparatus, the organs of circulation, voice, and respiration; then follows a description of the nervous system and the organs of special sense. These chapters take up 57 pages and form an introductory to the body of the work, the latter concerning itself with the care and

the nursing of the sick. This portion of the work is exceedingly well done. There is no attempt made to usurp practical instruction in hospital, but only such principles are laid down as may guide the nurse in her daily work. Excellent instructions are given regarding ventilation, temperature, heating, application of baths, the record of the patient, etc. More than one-half of the work is taken up with the description of the special conditions, both surgical and medical, which the nurse is called upon to meet, and special emphasis is laid upon the observation of symptoms and their careful record, this constituting by far the largest portion of the nurse's duties.

ESSENTIALS OF SURGERY. By Edward Martin, A.M., M.D. Being No. 2 of Saunders's Quiz Compends. Seventh Edition. Price, $1.00. Philadelphia: W. B. Saunders. 1900.

Dr. Martin, in his preface to the first edition, draws a vivid picture of present methods of medical education. He says: "As one thrown yearly in contact with large numbers of medical students and familiar with the furious rate at which they are driven, the writer feels assured that under our present system of rapid education outline works are of distinct value. Three-year men, after attending six lectures and two clinics daily, have no time for reading, no time for systematizing their knowledge on any one subject. This work must either be done for them, or left undone." If the above quotation is correct, and, unfortunately, we believe that it is, it shows that there is a crying demand for the application of pedagogic science in the medical education. There are many experienced medical teachers who are beginning to doubt the value of the mere stuffing process, without mental digestion or assimilation. Methods of a quarter of a century ago are still followed, but under very different conditions. Then the average medical course extended from sixteen to twenty weeks, and of necessity a large amount of work must be crowded into each day. To-day the course has been lengthened to four years of nine months each, but still the daily cramming process goes on. However, until the reform in medical education is reached, we shall need a quiz compend and other short roads to systematic knowledge. Among the best of these is the excellent one which we are reviewing. In the form of questions and answers, it fulfils a want of the student and enables him to prepare for examination and to test his own knowledge.

TRANSACTIONS OF THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION. Twenty-fifth Annual Session, Held at Chicago, October 3, 4, 5, and 6, 1899. Volume I. Printed for the Association. 1899.

This handsome volume of transactions of 474 pages is the first report that the association has ever issued, though its last annual meeting was the twenty-fifth. That the important work of this society is so admirably presented is due to the energy of the able secretary, Henry E. Tuley, of Louisville, Ky., who has done so much to build up the Mississippi Valley Medical Association. The report has a short historical sketch by W. N. Wishard, telling us how the association was originally formed as the Tri-State Medical Society, the scope of its membership being subsequently enlarged until now it stands next to the American Medical Association as one of the leading societies of the United States. In the volume are found the President's address delivered at the

Chicago meeting, the address on medicine by John A. Witherspoon, and on surgery by Louis S. McMurtry. There were forty-seven papers read at the Chicago meeting. This volume closes with the minutes of the twenty-fifth annual meeting and a copy of the constitution and by-laws. The work is printed upon unglazed paper and is a very creditable production, being one of the handsomest volumes of transactions ever issued.

ESSENTIALS OF DIAGNOSIS. By Solomon Solis-Cohen, M.D., and August A. Eshner, M.D. Second Edition, Revised and Enlarged. Price, $1.00. Philadelphia: W. B. Saunders. 1900.

This forms Volume XVII of Saunders's Quiz Compends, and is a handy volume of practical diagnosis in the form of questions and answers, prepared especially for students in medicine. The same general arrangements that are found in all the quiz compends are followed in this, but we note a tendency in these small volumes to an increase in size and to a lengthening of the answers. In some instances in the present book the questions form mere chapter headings—for example, under the heading "Typhus Fever" the question is asked, "What are the symptoms of typhus fever?" The answer occupies a page and a half, and the subject of typhus is closed by two other questions, answered at about the same length. While this work is labeled "A Question Compend," it forms an exceedingly compact and excellent manual of physical diagnosis. The descriptions differ from mere definitions found in works devoted especially to helping out the student in his preparation for examination.

EDITORIAL COMMENT.

THE PLAGUE.

In former issues we have called attention to the danger of the spread of this infection. With the appearance of an infected ship from Santos, Brazil, in New York harbor, the plague in Oporto, and the extraordinary efforts made to stamp it out in Honolulu, there was an increase in anxiety in this country lest the plague should become domiciled with us. For the time being the plague seems to be under control in the centers mentioned, and the world has lulled itself into a false sense of security in the general belief that the plague rarely affects Europeans, or if it does, only to a mild degree, and that modern sanitary science, as exemplified in the Occident, is capable of stamping out this infection, so that practically we have nothing to fear.

We believe that such a view is a serious menace to the public health, and it is important that our local health officers should do something to put our American cities in such a condition that they need have but little fear of an invasion of the plague. We are tolerably familiar with the conditions in Chicago; we believe that many American cities are not better prepared for a plague invasion than is this city. Large areas are filled with a comparatively dense population which is crowded into unsanitary tenements. The sidewalks are of wood, and large numbers of rats inhabit these regions; and plague that once gets a foothold would be controlled with the utmost difficulty.

Writers tell us that the greatest difficulty in dealing with the plague is the matter of diagnosis; in fact, without the identification of the bacillus, an accurate diagnosis is impossible. The clinical picture of the disease is so vague; what are known as the anemic and the ambulant types so closely resemble comparatively innocent infections which are grouped under the title of influenza or anemia. Experience in the East has shown that when the plague is once thoroughly seated in a place, it runs year after year. Sanitary measures seem for a time to stamp it out, and no cases will be seen for months. Then a few will be found, and, notwithstanding the most heroic efforts, the following year there will be as many deaths as there were during the first invasion. The sanitary condition of our large American cities does not warrant optimistic views as to the

ease with which the plague will be controlled if it once reaches them. It may be possible, by a vigorous quarantine, to keep it out of the country, but late experience with the plague does not lead to the hope that this will be accomplished.

The government should not content itself with publishing the list of infected ports and inspection of vessels coming from places in which the plague prevails. There is no body of experts in this country capable of recognizing the plague, nor those who have had practical experience in dealing with the epidemic. This could be easily remedied by sending medical men to infected places to study the disease upon the ground and the best means of dealing with the plague. In past epidemics we have been taught by painful experience how powerless the average general practitioner was to deal with them. It is only recently that several epidemics of smallpox obtained considerable headway, owing to the diagnosis of chicken-pox having been made by the local profession, this diagnosis being persisted in, though wholly unjustified by the clinical picture of the disease and the inherent probabilities in the particular cases. The same is true of the army surgeons appointed during the late war with Spain. They failed to recognize epidemics of typhoid fever until they were well advanced, for the most part—the cases being classified as malaria long after the typhoid character of the infection was pronounced.

As an addendum to the above we would call attention to an article in the *Montreal Pharmaceutical Journal* for May, 1900, in which a strange disease is said to have broken out at Butte, Montana. The Board of Health believes that it is a new form of pneumonia. It has killed about 150 persons since the middle of March, and it is stated that there are now 250 ill with the disease. It is said to be fatal in nearly every instance, and death ensues within four days after the attack in the majority of cases. The bodies of the victims turn black almost immediately after death. In one hospital, forty-four out of forty-eight cases died, and other hospitals report about the same alarming percentage of mortality. The lungs are the first affected; there are severe pains in the head, and great difficulty in respiration; then the heart is attacked, and death follows quickly. Many persons in Butte think that the disease is a form of plague which was brought to this country by the soldiers returning from the Philippines, bringing with them a great number of gay robes, mantillas, draperies, and rugs.

It would be hasty to state that the above is an example of the plague, but if the facts given in the *Montreal Pharmaceutical Journal*

are correct, it is certainly a very suspicious epidemic, and, judging from the description given, not very unlike the pneumonic form of the plague. We have looked for some such indications of an epidemic to appear somewhere in the United States and to be later identified as plague, the diagnosis perhaps not being made for weeks or months after the epidemic is under way.

THE CARE OF A WEAK CONSTITUTION.

No small part of a physician's work consists in the care of those of his patients who may be defined as being of weak constitution. It is certainly true that there is a vast difference between individuals in a matter of that indefinite attribute that we call "constitution." It is hard to define because it is a complex of so many elements—of heredity, training, activity, nutrition, reflex nervous excitability, heart power, digestive force, mental force. None of these are to be estimated by a superficial examination. In no one thing are we so apt to be mistaken as in the estimate of constitution. In the support of disease, as in the support of physical labor, previous experience seems to have a great influence. Thus the chronic invalid is able to endure suffering and disease that would be insupportable by a person previously in good health. The power of heredity in its influence upon the course of disease is ably illustrated by tuberculosis. In a family a number of which have succumbed to tuberculosis, the disease is much more dangerous than in those who have resisted it. No disease is more dependent upon constitution. Indeed, up to the present time our only treatment consists of the indirect influence upon the disease of an improved constitution. Training has much to do with the constitution as affecting the power to endure labor, to sustain hardship, and to withstand the effects of indiscretions of food, drink, etc. Thus the weakly child who has always been compelled to labor is able to endure it in a way that would be impossible to the child of the same caliber who had not been forced to labor. The soldier at the camp can endure hardships without thought that at the beginning may have exacted many protests from himself and excited much sympathy on the part of the community. The dissipated youth can stand an amount of loss of sleep and other irregularities that would render the inexperienced boy incapable of attending to his daily work. So in the estimate of the effort of any given condition the previous training of the individual must be carefully weighed. The constitution is not, however, strengthened by abuse. It seems to gain a power of

resistance in particular directions at the expense of some other quality. Thus the man who has through toil learned to endure the physical exertion of an outdoor life of labor, has often lost in reserve nerve power, so that in the endurance of hardship he can be surpassed by the more delicately reared. The person who has suffered and borne an infectious disease may not again suffer from the same infection, but is more liable to other infections.

Tuberculosis is apt to follow scarlet fever. The power of nutrition and digestive force are of extreme importance in their bearing upon the constitution. Indeed, when the nutrition of the body can be kept up nearly every condition can be borne. In acute diseases so long as the stomach holds out there is always an expectation of recovery. Reserve heart force is of great importance in its influence upon the power of the body to resist disease. Especially is this true in pneumonia and prolonged fevers, and here is shown unerringly the effect of dissipation, particularly in pneumonia, and of overwork, particularly in typhoid fever. If the constitution has deteriorated before the onset of the disease the result will soon appear. In the power of the body to resist disease, which we speak of most often when we use the word "constitution," reflex nervous excitability is an important element. Especially is this true in the case of surgical injuries. Without reflex nervous excitability the system cannot react properly after a severe injury. Mental force often enough has made up for many other defects in constitution. History is full of instances where the mind seems to have controlled a failing constitution and sustained it through arduous labor and severe disease. All these things are to be considered in estimating the constitution, and in one way or another they can be brought to bear for good or for evil in the care of the constitution.

ANKYLOSTOMIASIS IN PORTO RICO.

Among the large family of tropical parasites which we have annexed as a result of the expansion policy must be reckoned the *Uncinaria duodenalis*, which inhabits the upper end of the small intestine, sometimes reaching within a few centimeters of the pylorus and extending well down into the jejunum. The male worm is from ten to sixteen millimeters in length and the female from ten to eighteen millimeters. They attach themselves to the mucous membrane and rapidly suck the blood of the patient, producing a profound anemia, with secondary symptoms of weakness and prostration.

Bailey K. Ashford, in an article in the *New York Medical Journal* of April 14, 1900, gives a report of twenty cases studied in Porto Rico. That the disease is prevalent in the West Indies has long been known, and it is probably found in most tropical countries where there is overcrowding and deficient food supply. It was first recognized in Egypt by Griesinger, who identified it as the cause of what was known as "Egyptian anemia." Ashford observed twenty cases which were not recognized by the local physicians. He was able, by examining the feces, to detect the ova of the parasite in large numbers. The matter of diagnosis with the microscope is very simple, as the ova have a diameter of about fifty-two micromillimeters. A large dose of thymol in these patients brought away the parasites in great numbers. The local physicians of Porto Rico agree that the disease is the most destructive and general found in the island. It is oftenest found among the poor and badly fed. Bad food and bad hygiene are responsible for the more severe effects of the disease. The ignorant peon commonly treats himself by purging, which is followed by some improvement, only to be followed by a relapse. The local physicians have frankly declared that the disease is quite beyond their power, and they have regarded it as a pernicious progressive anemia of obscure origin. The writer gives a most discouraging account of the destitution and unhygienic surroundings of the poorer classes of Porto Rico. He says they commonly rise at from four to six o'clock in the morning, and breakfast consists of only a little black coffee, some boiled water, and sugar. Breakfast taken at eleven o'clock consists of a few pieces of codfish and a few pieces of plantain. Work is resumed and concluded at five o'clock. Dinner consists of rice and beans, some having only rice and lard, and others boiled rice alone. Plenty of bad rum and some bad wine is to be had. There is no provision made for the proper disposal of excreta, which is deposited anywhere upon the ground in the neighborhood of houses, and very soon the drinking-water is contaminated. Among well-to-do people, who filter the water, comparatively few cases of the disease have been noted.

He calls special attention to the blood examination, which shows a severe anemia, falling as low as in Addison's disease in quantity of red cells; it shows a very low hemoglobin average and a low color index. There is a very marked eosinophilia in some cases; in one it reached 40 per cent. Leucocytosis is not common to the disease itself, and when it occurs it is apparently due to complicating factors. Normoblasts are frequent, and in some cases megaloblasts but never a majority of the latter. Poikilocytosis is common.

In the treatment of these cases, blood foods and tonics were found to be absolutely useless. Anthelmintics, chiefly male-fern and thymol, have been found useful.

TO IRRIGATE OR NOT TO IRRIGATE IN INFLAMMATION OF THE PERITONEUM AND AFTER ABDOMINAL OPERATIONS.

There is still a wide diversity of opinion among surgeons as to the value of irrigation after surgical operations and in inflammation of the peritoneum. Many operators believe that intra-abdominal work should follow the same rules that are applied to surgery on external surfaces. The peritoneum is surgically regarded in the same light as the skin, they both having epithelial coverings. Incisions into the peritoneum are to follow the same rule as incisions into the skin, and after the removal of organs or plastic work within the abdomen the incisions are covered in by this membrane, which is to be carefully sutured. With an aseptic technique and field, such a conception of abdominal surgery is an ideal one. An operation which leaves carefully approximated peritoneal surfaces and the abdomen perfectly dry at the time of the closure of the external wound, leaves nothing to be desired in the aid of the healing process.

The conditions that confront a surgeon in a septic case, or one in which the inflammation has extended to the peritoneal surfaces, are quite different. Here the question of irrigation is still *sub judice*. Many operators are of the opinion that if the infection is of sufficient severity to have extensively involved the peritoneum, irrigation will be of no value, and, on the contrary, may do harm by diluting and spreading the infection to previously uninvolved portions of the peritoneum, and may actually aid in the absorption of toxins from the peritoneal cavity. Other equally good operators are of the opinion that irrigation does get rid to a certain extent of the infecting agent and ptomaines, and the products of bacterial growth are washed out of the abdomen.

Unfortunately, the question is one to be decided largely by the experience and opinions of individual operators, as it seems almost impossible to study it from an experimental basis, and the examination of statistics presents so many extraneous and accidental conditions that figures based upon these alone are exceedingly fallacious. So far as conclusions may be drawn from the published cases, we feel safe in asserting that aseptic operations should be conducted without flushing and without drainage. In those in which there is a general infection of the peritoneum from a suppurating focus, or in which the operation is made for the purpose of

relieving septic peritonitis, it is probable that flushing and drainage is a material aid in the recovery of the patient. The flushing, if done at all, should be thorough; that is, in a wide-spread septic peritonitis, if it is to be of any value, it must not consist of the pouring of a few quarts of water into the abdominal cavity and allowing it to drain away, but it should be done with many gallons of aseptic normal salt solution. There are now a number of cases on record in which some form of continuous irrigation has been employed with success. There is great need of further studies along these lines, as the treatment of septic peritonitis from the operative standpoint does not form a brilliant chapter in the mortality records.

INOCULATION WITH THE MALARIAL PARASITE.

Much has been written in the last year upon the means of transmitting the malarial parasite to human beings. That the mosquito is responsible in the majority of cases for the infection is an accepted view on the part of many pathologists. There are, however, some links in the chain of evidence establishing this fact which seem to be wanting. An interesting observation is reported by W. H. Katzenbach, in the *Medical News* of April 21, 1900, of what is regarded as a probably accidental inoculation with the malarial parasite. The author advisedly uses the word "probably," although the evidence in support of his conclusion would seem to justify a somewhat stronger statement.

The main facts in the case are as follows: On September 18, 1899, a physician performed a vaginal hysterectomy upon a patient. The following day the patient had a chill; at noon the next day she had a second chill; and on the third she was given some large doses of quinine, which stopped the paroxysms. The surgeon who performed the operation was taken with a chill October 4, or sixteen days after the operation was performed. During the hysterectomy the surgeon pricked himself a number of times with the needles. The patient had had malarial fever for a number of years and came from a malarious region. The physician had suffered from chills and fever in 1866, but for the past twenty years had been a resident of New York. The examination of the surgeon's blood showed a large number of the estivo-autumnal variety of parasites. In conclusion the writer says it is not difficult, in the light of the above, to conceive that the surgeon was inoculated by the needle while operating on a patient in whose blood, at the time of operation, a group of parasites was passing through its cycle of development. The patient's first paroxysm was within twenty-four hours of the opera-

tion. Only a few days before operation she had come from North Carolina, a section in which the estivo-autumnal type of the parasite prevails. This form has not been found in the blood of patients infected in the ordinary way in the vicinity of Manhattan. The surgeon had not, so far as he knew, been exposed to malarial influences for years.

TRANSFUSION IN THE TREATMENT OF SHOCK.

This method of treating shock has come increasingly into vogue, and it is one of very great value. Now and then we read of a case in which after hemorrhage or injury there follows severe shock and saline solution is transfused, but the symptoms are not relieved. One is tempted in these cases to question the temperature at which the solution is used. If the normal salt solution is passed directly into a vein, it is comparatively easy to use the fluid at a proper temperature, namely, at about 105°. With a short glass tube, and poured through an ordiuary funnel, this reaches the patient at a temperature which will be of service in overcoming shock. It has been experimentally shown, and practically at the bedside of patients, that if the temperature of the fluid used in intravenous transfusion be below 100°, it increases rather than diminishes the shock, and this slight additioual strain upon the vital powers of the patient may be sufficient to turn the tide against him. In hypodermoclysis the time necessary for the transfusion of a pint or more of fluid through one needle is not less thau thirty minutes. If an ordinary bag is used, and the funnel-shaped glass percolators commonly found in the operating-room, there will be an enormous fall of temperature from the time the infusion is begun until it is finished.

Carl Anderson has carefully worked out the loss of temperature from the open vessel, aud also of the passing of the fluid through the rubber tube. He has devised an instrument which has a glass container surrounded by a metal coil, through which hot water is allowed to pass. This is so arranged that water at a certain temperature passed through the metal coil will maintain the temperature of the fluid in the container exactly the same for a period sufficiently long to make an ordinary hypodermic transfusion. In view of the increasing importance of transfusion, in the treatment of infectious conditions as well as for the relief of shock and hemorrhage, an apparatus such as he has devised, based as it is upon accurate study of the conditions to be met, cannot fail to be of great value to the surgeon and physician.

ABSTRACTS.

MEDICINE.

Plague Viewed from Several Aspects.—

W. J. Simpson (*The Lancet*, April 14, 1900) delivered an address before the Southwest London Medical Society upon certain aspects of the plague. It is of such general interest at this time that we feel justified in making an extended abstract. Six years ago plague was regarded as a disease of historical interest only. Its presence was known in one or two centers in Persia, India, Arabia, and China, and it was thought to be of little importance. Its presence in these places was attributed to unsanitary conditions. This view took no cognizance of the natural history of plague nor of the rarity of an infectious disease completely disappearing from every part of the world. Plague has always been characterized by periods of activity and of quiescence, often disappearing completely from the countries where it has prevailed for years, and not reappearing for long intervals. The last pandemic of plague was in full activity in the seventeenth century, and it covered a large portion of Asia, Africa, and Europe. In 1845 it disappeared from Egypt, which had for many years been an endemic center. This was considered to be a great sanitary triumph, but it is now known that similar disappearances have taken place, and that in one of these intervals Egypt was free from plague for at least 300 years. Since 1850 the plague has shown a tendency toward recrudescence, as was shown by the local outbreaks in Asia Minor and on the Volga twenty years ago, and in the extension of the disease from Yunnan to Pakhoi about the same time. It is a remarkable fact that the more reports of plague are studied, the more these "endemic centers" recede. The term is only a relative one, and so far as can now be determined the plague must be regarded as having no permanent home. Even in Mesopotamia, its oldest and most permanent abiding place, plague disappeared for seventy-five years at one time, and for one hundred years at another. There are no restricted localities where it can be said that plague has always existed; the endemic centers shift from one locality to another.

The Chinese endemic center in Yunnan, from which the present pandemic started, is between five thousand and seven thousand feet above the sea. It has been known as an endemic center of plague

since 1870, but there are Chinese records which seem to indicate that the disease probably existed there over one hundred years ago. There are no records which make the endemic center older than this. There is no evidence to show that the black death of 1348 rose from Yunnan. A notable fact connected with this center is that notwithstanding the backward condition of sanitation in China, the tendency of plague to spread from Yunnan has been so slight, even in the presence of a rebellion in the province, that it has taken more than fifty years to reach Canton, a distance of about 1000 miles. Previous to reaching the latter place the disease had never assumed epidemic proportions. In 1894 it destroyed 80,000 of the one million inhabitants in Canton. Since 1894 the plague has prevailed in China, Formosa, Japan, India, the Philippines, Honolulu, Mauritius, Jeddah, Alexandria, and Oporto, and has made its appearance in South and Central America, on the eastern coast of South Africa, and in Australia. The general mildness and limitation of the cases which have been seen outside of Asia has led to the belief that, except among the Asiatic races, the plague is not likely to assume grave proportions; the disease, however, is slow and insidious, and its hold on a locality is not to be measured by its first, second, and even third manifestations. Calcutta has had plague since 1896, yet it is only in the present year that the disease has assumed large proportions. The great plague of London was but the culminating stage of several previous epidemics occurring at intervals of time over some seventy years.

Modern systems of rapid communication have placed us in a much more favorable position to combat the plague, but even with these advantages it is a curious fact that the manner in which a locality becomes infected can seldom be detected. In the investigations which have been carried out to decide this question, the cases which were supposed to be the first are almost invariably found to have been preceded by others, until the record goes back to a time when nothing can be definitely settled.

The plague has a number of clinical varieties, the most difficult of recognition being the ambulant, the fulminating, and the pneumonic types of the disease. The ambulant is apt to be overlooked, because of the mildness of the symptoms. In this type there is slight fever, malaise, headache, and congested eyes; the sickness is often short in duration, and does not attract any particular attention. The fulminating and pneumonic types are severe and fatal forms of plague, often without buboes, and are likely to be taken for other diseases.

The importance of the dissemination of plague by rats has only gradually been appreciated. It is not when these animals die by hundreds and thousands that the plague is to be suspected, but long before that time, when there are individual cases among the rats. It is recognized by the Hindus that when rats begin to die in a house it is time for the inmates to leave. Rats, when they begin to sicken with plague, leave their holes and come out into the open; they look ill and are in a dazed condition. Their coats are partially deprived of hair, and they hobble about with difficulty and stagger and fall.

It has been a decided advance in our knowledge to learn that there are varieties of the plague which are not easily recognized, and that rats are susceptible to the disease and are disseminators of it. Great importance has always been attached to the danger of extension of plague, when the town is in the throes of an epidemic, but probably there is more danger to countries communicating with it at the beginning or decline of an epidemic.

The difficulty of diagnosis of plague rises from the several types. In Bombay some of the earlier cases, with swollen cervical glands and other symptoms, were mistaken for diphtheria. In Jeddah, where lung trouble existed, the disease was thought to be influenza. In Calcutta, where the mild symptoms with buboes occurred, some were thought to be due to syphilis. It is evident that a disease which may be mistaken for yellow fever, gastric enteritis, typhoid fever, diphtheria, influenza, syphilis, malaria, and parotitis, is one in which diagnosis from clinical symptoms alone is by no means easy. The two most perplexing forms of plague are the ambulant and the pneumonic. The ordinary bubonic form has, as a rule, the most characteristic symptoms. There is a peculiar physiognomy, red and congested conjunctivæ, peculiar defects of speech, a coated tongue, and a staggering gait. When these symptoms are met with, a careful examination should be made for the presence of buboes or of lung disease, and this should be supplemented by the examination of sputum for bacilli. In the fulminating, septic, and pneumonic types of the disease, an examination of the blood and sputum for the characteristic bacilli is the chief diagnostic test.

In the treatment of plague very little reliance can be placed upon the older methods of curative treatment. Good nursing and stimulants will do something to aid the patient in the struggle, but neutralization of the toxic products in the system is the ultimate aim in treatment. Yersin's serum, or one prepared in a similar manner, probably affords the best results. The results with this method have been favorable in China, but it has proven disappointing in

Bombay. This difference is attributed, by the Paris authorities, to a different method of preparing the serum. That which was used in China was secured from horses which had been injected with living cultures of the plague bacillus. Later, dead cultures of the plague bacillus were substituted, and the serum which was obtained was not nearly as efficacious; and it is claimed that the latter variety is what was used in Bombay. At the Pasteur Institute they have now returned to the original method of preparing the serum. Personal prophylaxis can be secured for medical attendants and nurses by the use of the Haffkine serum. In the line of the public health service an improvement in sanitary conditions, the destruction of rats, and above all the instruction of health officers in the recognition of plague, are of the utmost importance.

A Fatal Case of Constipation.—

Robert Brummitt, in the *Australasian Medical Gazette* of March 20, 1900, reports an exceedingly interesting case in which we are by no means assured that death was due to the constipation, but certainly it was the most striking symptom in the case. The patient was a boy 16 years of age, who had suffered from obstinate constipation from birth. Laxatives of all kinds gave only passing results, and during childhood sluggishness of the bowels continued, in spite of constant care. At four years of age some external hemorrhoids were found, but there was no rectal abnormality revealed by digital examination. Almost every laxative and intestinal tonic was used as the years passed. Massage was employed, but nothing gave relief. When the condition was aggravated, a large injection of soap and water was given, which washed out the bowel. Without active interference there was never a spontaneous movement. During childhood the patient was frail and ill-nourished. When he was 15 years old his weight was ninety-seven pounds. In March, 1899, there was an attack of abdominal pain; an injection containing turpentine gave prompt relief. At this time he passed under homeopathic treatment, and was not seen again for six or seven weeks. He was then found to be in great distress, not having voided feces for a month. Temporary relief was obtained by passing a long tube beyond the sigmoid flexure and injecting soap and water. At this time the abdomen was somewhat distended, and very striking vermicular movements of the intestines were noted during the attacks of pain. These contractions were marked by undulations which moved over the abdominal surface, beginning in the left inguinal region, passing slowly to the right of the umbilicus,

and then turning to the left, over the course of the transverse colon. These movements were at first only occasional, but they increased in frequency and were always accompanied by acute pain and considerable noise, often audible in the next room. Diligent efforts were made to empty the colon, the abdomen being kneaded and rubbed in the direction of the large intestine, and copious injections were used, those composed of olive oil giving the least pain. This treatment was combined with the application of the faradic current to the abdomen, but without benefit. In July, 1899, there was a slight evening rise of temperature, the patient had a tender abdomen, and the undulations were less frequent. Death ensued four days later, the apparent exciting cause being peritonitis.

At the post-mortem examination, made twelve hours after death, the abdomen was found much distended, its walls being devoid of fat, and the muscular layers extremely thin. When the abdomen was opened, coils of small intestine presented, which had a diameter of from two and one-half to three inches, and were filled with air. These coils hid the ascending colon from view. The intestine over it was very red and covered with recently formed lymph. The lower part of the ileum was almost full of semisolid matter; others were empty and flaccid. The ascending colon was found to be full of hard feces, as was the cæcal pouch. The transverse colon was full of scybalous masses. The walls of the colon were very much thicker than normal, and the contents of the large intestine and ileum weighed three and a quarter pounds. The mucous lining of the cæcum and upper portions of the colon was deep red. There were two ulcers in the posterior part of the gut. Careful examination failed to reveal constriction in any part of the intestinal tract, or abnormality in its outlines.

The writer regards the case as one of congenital weakness of the intestinal walls, probably due to defective innervation. During the last few weeks of life there was fecal obstruction, and during the last few days peritonitis.

Typhoid Spine.—

R. W. Lovett and Charles F. Withington, in the *Boston Medical and Surgical Journal* of March 29, 1900, report a case of this affection and an analysis of those found in the literature. The latter consist of nine cases, from which they generalize the following clinical picture: The patients are young adult males. The spinal affection occurs late in the convalescence, or after the patient has fully recovered. It may follow an accident or may occur spontaneously.

It affects the lower dorsal or lumbar region and is attended by paresthesia, variation in surface reflexes, pain and rigidity of the spinal column being excessive. The latter is due largely to voluntary muscular contraction.

The case reported is one in which there must have been a destructive osteomyelitis, as deformity resulted which was associated with certain nervous phenomena. These were partly due to pressure, and others were distinctly hysterical in their character. The patient was a physician of good physical development, 35 years of age. He had had pneumonia in 1886 and dysentery in 1891. July 17, 1898, he was taken sick with continuous high temperature, followed by a watery diarrhea. On September 25 he first noticed lameness in the lumbar region, followed by severe cramps which required the injection of morphine. From this he recovered, but on November 26 he had a slight chill. The following day the cramps in the back returned and grew rapidly worse. On December 3 he entered the Boston City Hospital. At that time his temperature was normal; the abdomen was tympanitic, but there were no rose spots. Repeated examination revealed no plasmodia. He complained chiefly of pain in the lumbar region, spasmodic in character. The blood examination showed a normal number of white cells, but there was a characteristic typhoid fever reaction. On the outer surface of both thighs there was a diminished pain sense. The deep reflexes were increased, but the superficial were sluggish. The spines of the lower dorsal and upper lumbar vertebræ were tender to pressure. January 3 there was no prominence of the vertebral spine. The pain in the back was greatly aggravated by attempting to stand or by movements. Five days later the patient began to move about a little, and it was noted that there was a distinct projection of the eleventh and twelfth dorsal and first lumbar vertebræ. Treatment with jackets and support was used for nearly a year, during which time he had several careful examinations. There was marked paresis of the lower extremities and considerable muscular atrophy, which gradually yielded as the patient was able to exercise more with the support afforded by a jacket. When last heard from he was still wearing the leather jacket, the deformity was still present, and the anesthetic areas on the outer sides of the thighs persisted.

Two views have been held regarding the typhoid spine: in one it is regarded as a neurosis, and in the other as a spondylitis. In the case here reported it would seem as if both conditions were present. We have the functional nervous symptoms as well as the deformity, which conclusively show that there was general involvement.

Changes in the Skin in Paralysis Agitans.—

Robert Reuling, in the *Maryland Medical Journal* for March, 1900, confirms the observations of Frenkel on the changes which occur in the skin in Parkinson's disease. According to Frenkel, these consist of a thickening of the skin with an irregular distribution. Sometimes the skin covering an entire extremity will be thickened, while the corresponding limb of the opposite side will have a normal skin. With this more diffuse thickening there are, as a rule, small areas in which the thickening is circumscribed. The skin adheres closely to the subcutaneous tissues so that it is impossible to squeeze it into folds in the portions of the body where this is easily done in the ordinary state. The most marked change is seen on the forehead. The general appearance of the thickened skin differs little from the normal, so that only by careful comparison over symmetrical areas can differences be detected. Frenkel is of the opinion that the pain and paresthesia of which these patients complain are due to changes of the skin, an opinion with which Reuling agrees.

The case described by Reuling was a typical one of paralysis agitans, in which the following changes in the skin were noted: On examining the skin of the upper extremity very little change in appearance was noted; over the extensor surface of the left forearm it appeared slightly glossy and had the appearance of being stretched. On the left side a diffuse thickening could be made out, reaching over the lower third of the forearm to the shoulder. Beside this evenly distributed change there were circumscribed areas in which the increase was much more marked. One of these was seen over the triceps region, and another about the size of an infant's hand over the upper side of the forearm, on its extensor surface. The skin over the left arm was more adherent than that of the right and also that of the back, especially in the scapular region. A piece of skin was removed from each upper extremity, which upon measurement showed a thickness of four millimeters on the left side and two millimeters on the right. This corresponds with the observation of Frenkel, who determined a thickening of two millimeters in the affected area by means of an instrument devised for this purpose. On examining the sections the difference in thickness was found to be due to changes in the subcutaneous tissue and the derma. The fibrous tissue was markedly increased in the skin. The fibers were arranged in coarse bundles.

Six cases in all were examined, in four of which the skin changes described by Frenkel were found to a considerable extent. The author believes that they are present in the majority of cases, but

may be absent in well marked cases of Parkinson's disease. The thickening occurs in parts of the body in which there is no tremor, but as a rule it is more marked in the extremity in which the tremor first appeared.

Transient Real Blindness in Hysteria.—

G. C. Harlan, in the *Journal of Nervous and Mental Diseases* for April, 1900, discusses a very interesting case which contributes not a little to solving the relations between hysteria and amblyopia. The patient was 23 years of age, and at the time of coming under observation complained of a loss of vision in the left eye of three days' duration. The right eye had full vision and was normal in all respects; in the left vision was reduced to the perception of fingers at four inches. The ophthalmoscopic appearances were normal, with the exception of a slight retinal hyperemia. Various forms of confusion tests failed to elicit any higher degree of vision than was at first admitted. There was decided inversion of the blue and red fields. Three days later there was complete monocular blindness. The v. Welz test, which consists of watching the behavior of the eyes behind a prism, seemed conclusive that vision was absolutely lost in the left eye. The patient was directed to look toward a flame, and a prism based toward the temple was placed above each eye alternately. When it was held before the blind eye there was no movement whether the other was closed or open, but when it was placed before the right eye there was very evident deviation of both eyes to the left, and recovery after the prism was removed. The writer believes that this test is absolute, as the turning of the eye for fixation is a matter over which the subject has no control. About ten days later the patient was again seen, when she announced joyfully that vision had returned in the left eye, and it was ascertained that she was able to read LXX Snellen at twenty feet. The case especially interested the reporter as it seemed to be a typical hysteria, and he was quite satisfied that the eye was absolutely blind. It interested him particularly because with a considerable experience with cases of this kind he has only found one other in which the blindness was real; he usually succeeds in making the patient read with the blind eye.

Eosinate of Methylene Blue as a Blood-stain.—

C. E. Simon, in the *Maryland Medical Journal* for April, 1900, says that the use of eosinate of methylene blue is a decided advance in laboratory technique, as it is possible to stain blood without previ-

ous fixation. With Ehrlich's triacid stain, either heat or immersion in equal parts of alcohol and ether must be employed, and even then the results are quite disappointing. He affirms that with eosinate of methylene blue the procedure is simpler than with Ehrlich's, and it furnishes results which on an average are as good as the best results that can be obtained with the old method. He thinks, too, that this new stain furnishes more information, as the basophilic granules, the mast cells, and the red corpuscles which are undergoing degeneration are more readily stained; also any bacteria or malarial organisms that may be present may be distinctly brought out.

The stain is made by adding equal parts of a 1.2-per-cent aqueous solution of eosin to a one-per-cent solution of methylene blue in an open basin, which is allowed to stand for twenty-four hours. The precipitated eosinate methylene blue is filtered off and dried at ordinary temperatures. This powder is washed with distilled water, again dried, and stored in suitable receptacles. The crystals have a greenish luster and are practically insoluble in cold water, very slightly soluble in hot water, but are readily dissolved in alcohol or in solutions of eosin or methylene blue.

For staining purposes Simon employs a saturated solution of the dye in alcohol, to which ten per cent of glycerin is added. The blood is spread as usual upon slides. When they are dried they are covered with a few drops of the solution, which is allowed to remain from two to five minutes, after which they are rinsed in water and thoroughly dried by slow evaporation and subsequent mild heating. The individual granules in the neutrophilic leucocytes are stained a purple. Polychromatophilic and granular degeneration of the red corpuscles are readily recognized. With diabetic blood a moderate Bremer's reaction is obtained. The red corpuscles are colored a pale green or yellowish-green, or they remain uncolored. The basophilic leucocytes present a violet granulation, and malarial organisms as well as bacteria are stained a sky blue. He regards this stain as a decided advance in the technique of blood examinations.

Botulism.—

E. Levy and F. Klemperer (Elements of Bacteriology, 1900) under the term botulism describe a new form of infection which has been identified by Van Ermengem and Ellezelles as the cause of meat poisoning. It is said to be due to the bacillus botulinus. Under the designation of meat poisoning are included two entirely distinct symptoms complex which should be rigidly differentiated from each

other. The one variety, which is gastrointestinal, closely resembles cholera nostras, being a simple hemorrhagic gastroenteritis. These disturbances of the intestines arise from the ingestion of decomposed meat, or meat taken from diseased animals. In most cases of this kind the exciting agents are bacteria of the colon or proteus group.

The second variety is identical with so-called sausage poisoning, and is characterized by nervous symptoms of central origin, secretory and motor disturbances, dryness and redness of the mucous membrane of the mouth, dyspepsia, hoarseness, paralysis of accommodation, and mydriasis. For this form of the disease the designation meat poisoning should no longer be employed, and it has been given the name botulism. Botulism may arise after the ingestion of special kinds of sausage, salt fish, smoked meat, and preserved meats of various kinds. These are articles of food that are intended for consumption after a considerable length of time, and by reason of their preparation are especially liable to undergo a fermentative process. It is, therefore, these kinds of food that give rise to the typical varieties of this intoxication.

The bacillus botulinus is a large, slightly motile rod, from four to six micromillimeters long, with rounded extremities, and from four to eight flagella. It is a spore-forming bacillus and is readily stained by Gram's method. The organism is strictly anaerobic, cultures retaining viability for more than a year if kept at a temperature below 86° F. It is easily destroyed by carbolic acid and by temperatures exceeding 105° F.

Lesions of the Thyroid Glands in Tuberculosis.—

H. Roger and M. Garnier contribute to the *Archives Générales de Médecine* for April, 1900, an interesting memoir on this subject. The thyroid gland presents in tuberculosis two kinds of lesions. Either it is invaded by the bacillus, which localizes itself and is surrounded by specific granulations, or else, under the influence of toxins which impregnate the substance of the gland, there develops sclerosis. Tuberculosis of the thyroid is rare. Sclerosis, on the contrary, is almost certain to take place during the course of general tuberculosis, if the latter disease lasts for a considerable length of time. From this standpoint the writers have taken up the subject of tuberculosis of the thyroid, collecting the cases of tuberculosis of this gland which are described in the literature and adding some of their own pathologic observations. In addition they have performed some experimental work upon infection of the thyroid with the tubercle bacillus. Subcutaneous and intraperitoneal inoculations

were not sufficient to produce tuberculosis of this gland, but it was necessary to inject the bacillus directly into the parenchyma of the organ. When this method was followed the results in different animals were variable. In guinea-pigs severe and extensive lesions were produced. In rabbits comparatively few lesions were produced, though a number of animals had distinct foci of infection in the thyroid. A study of the lesions produced experimentally shows that the infection in this structure does not pursue a different course from what it does in other tissues. There is at first marked inflammatory reaction, followed by the development of granular tissue which walls off the infection from the surrounding tissues, and finally there is caseation.

A Localized Scleroderma in the Distribution of the Right Fifth Nerve.—

James Galloway, in the *Clinical Journal* of February 28, 1900, describes in a clinical lecture a case of this rare condition. The patient has been continuously under his observation for seven or eight years. For some years prior to that time, when she was about 16 years of age, she consulted a medical man for what he diagnosticated as ringworm. He treated her by means of strong caustic applications, which removed the hair from the affected part. Gradually this space extended backward to the junction of the parietal and occipital bones, the skin over this area being sclerosed and of a brownish "old ivory" tint. In addition there are patches of the hardening of the skin on the right side of the nose and the right side of the lip. Recently a small patch of the same sort has been observed on the right side of the lower lip. Associated with this condition is well marked enophthalmus. The right eye has sunk backward to such an extent that it is difficult for the lower eyelid to accurately meet the upper. This imperfect apposition of the lid results in the tears running over the cheek. The enophthalmus is probably due to the same changes in the connective tissue within the orbit that have taken place in the fibrous structures of the skin. There is no alteration in the function of the eye.

Intermittent Gastric Hypersecretion.—

A. W. Etting, in the *Boston Medical and Surgical Journal* of March 22, 1900, says that chronic hypersecretion is a well recognized and not infrequent gastric disorder. Intermittent hypersecretion is of much less frequent occurrence, and comparatively few cases have been recorded in the literature. The history of a patient is given who sustained a fracture of the leg two years before coming

under observation, prior to which time he had never had stomach trouble. The first attack began with pain in the epigastrium, which was only relieved by morphine. This began early in the morning and usually lasted all day. The pain was diminished by vomiting, which usually came on about two hours after the attack began. During the forenoon he would vomit from a pint to two or three quarts of greenish fluid, which never contained food, excepting when the pain came on shortly after eating. Vomiting always gave relief. The amount of fluid vomited was largely in excess of that ingested. Since the initial attack, which lasted four weeks, the patient has been troubled with this excessive gastric secretion at intervals of two or three weeks, the period of attack having about the same length of time. There is a loss of weight during the seizures, which is regained when the condition subsides.

In the treatment of this condition during the attacks the stomach-tube should be passed and the stomach washed out with a weak alkaline solution of silver nitrate. If the pain is very severe, morphine should be given hypodermically, or cocaine may be given by the stomach. Thirst should be allayed by rectal enemata of normal salt solution.

A Spirillum Occurring in a False Membrane on the Tonsil.—

C. F. Craig, in the *Medical News* of March 10, 1900, says that our knowledge of the pathogenic spirilla is limited. He describes a spirillum which was found in immense numbers in a false membrane occurring on the tonsil. The patient was a young man who complained of difficulty in swallowing and soreness of the throat on the right side. He had no headache, fever, or other constitutional symptoms. There was an enlarged, slightly reddened right tonsil covered with a thick, dirty-white membrane. The throat in the region of the infected tonsil was inflamed. The membrane was irregular in outline with sloping edges. It was easily removed, leaving a reddened tonsillar surface beneath. An antiseptic gargle was given, and the membrane disappeared in a few days. Under the microscope the membrane was found to be composed of degenerated epithelium and an immense number of very active spirilla. These bodies were 20 to 25 millimeters in length. They resembled closely the spirilla of relapsing fever. Spirilla were described by Miller and Arnt, but these organisms differed from those described, being longer, and not found in the situations in which the spirillum sputigeneum and the spirillum dentium of Arnt are found. They

were strictly limited to the false membrane. The writer thinks that interest is lent to the case by this peculiar organism found in almost pure culture in a false membrane which closely resembled that of diphtheria.

The Massachusetts State Hospital for Consumptives.—

V. Y. Bowditch, in the *Boston Medical and Surgical Journal* of February 8, 1900, gives an account of the Massachusetts State Hospital for consumptives at Rutland. The appropriation for this hospital was made in 1895, and it was located at Rutland, about twelve miles northwest of Worcester. It opened to receive patients in October, 1898. This hospital was thought to mark an epoch in the treatment of tubercular disease in this country, as it was the first hospital of the kind opened under State auspices. It was announced at the beginning that only such patients would be admitted as it might reasonably be hoped to improve. The site of the hospital is a desirable one, at an elevation of about 1200 feet. The buildings are arranged in the form of pavilion wards, one story in height; the patients sleep in open wards as a rule. Sun-rooms and piazzas are placed at the ends of the wards, the whole being so arranged as to obtain the maximum of sunlight and fresh air. The site is protected on the south by a forest of pines, and here are located the various camps made by the patients from the boughs, and here much of the daytime is passed, both in summer and winter.

Since the establishment of the hospital 214 patients have been admitted, of whom 115 have been discharged. Of these, 35 were classed as arrested cases, 37 much improved, 17 improved, 24 not improved, 1 well, and 1 dead.

Thrush Fungus as a Cause of Gastritis.—

W. A. Bastedo, in the *Medical News* of March 24, 1900, says that the saccharomyces albicans is responsible for inflammation of the mouth, particularly in infants, but it has rarely been described as a cause of inflammation of the stomach. A few cases of gastritis due to this parasite have been described by European authors, but thus far none have been reported in America.

The patient was a woman 26 years of age, who prior to August 5, 1899, had been in her usual health. In the afternoon of that day she had a severe chill followed by persistent vomiting. There was severe frontal headache which continued for two days. Abdominal pain began thirty-six hours after the vomiting. These symptoms

continued for ten days, when she was admitted to the hospital. At no time was blood vomited. The bowels were constipated, the tongue dry and sore. She was anemic. The temperature was 99.4°, pulse 38, respirations 28. There was marked general prostration. The vomited matter cousisted of clear fluid containing a little mucus and many grayish particles which floated on the surface. There was no free hydrochloric acid. Large quantities of the fungus were removed by lavage. A careful examination of the mouth and throat showed that the fungus was absent from these organs. On the fourth day lavage showed no fungus, the appetite returned, and the patient was soon discharged recovered.

Latent Cancer of the Stomach.—

William Osler and Thomas McCrae describe in the *Philadelphia Medical Journal* of February 3, 1900, a group of cases in which carcinoma of the stomach was unsuspected during life. It is rare to find cancer of the stomach in an apparently healthy person dying of accident. The latent cases are most frequent in old persons, in whom the symptoms may be very slight or absent, or they are mistaken for the ordinary dyspeptic complaints of the aged. Cases of latent carcinoma of the stomach may be divided into three groups: (1) A very small number in general hospitals and a large number in almshouses and asylums. These cases are marked by a gradual enfeeblement, without indication of local disease. (2) Cases in which, with an absence of gastric symptoms, the lesions of associated disease seem sufficient to account for the condition. (3) Cases in which the metastases completely mask the primary disease.

In reviewing their cases the reporters are astonished to notice how extensive and wide-spread the disease may be, with practically no symptoms. In three of the cases a very large part of the stomach was involved, in two the cardiac orifice, and in two the pylorus. In one instance the growth involved the esophagus, and in one, to a slight extent, the duodenum. In three instances there was ulceration, and in five metastases were present.

A Palmar Reflex.—

G. W. Rennie publishes a preliminary note in the *Australasian Medical Gazette* of February 20, 1900, on a palmar reflex. He thinks that this may be analogous to the Babinski reflex in the foot. He claims to have demonstrated such a reflex in the hand, but how far it may be of service in diagnosis he is not prepared to say. If pressure be made upon the pisiform bone a contraction of the palmaris

brevis muscle is observed causing a depression along the inner border of the hand. The same phenomenon can be observed by pressure on the ulnar nerve above the wrist. Gentle stimulation of the skin over the hypothenar eminence, as by stroking with the finger or a pin, will cause a similar gentle contraction of the palmaris brevis muscle. He has found this in a large number of individuals, and has no doubt that it is a universal phenomenon in all healthy persons. The phenomenon must be a true reflex action, and it may be of some use in testing the relation of the reflex arc, upon the integrity of which it depends. The nerve supply of the palmaris brevis is derived from the eighth cervical and the first dorsal nerve roots; hence this reflex may be of use in localizing lesions in the upper part of the cord.

A Practical and Simple Method of Determining the Percentage of Hemoglobin.—

In the *Archives Générales de Médecine* for April, 1900, T. W. Tallquist describes a method of determining the amount of hemoglobin by direct observation of the tint imparted to a piece of paper. The drop of blood is received upon white filter-paper, and is then carefully compared with a color scale having ten different tints of red. In the article is a reproduction of this scale, which has been standardized by means of a Fleischl hemometer. The writer claims for the method extreme simplicity, adaptability for rapid clinical work, and at the same time nearly as accurate results as the measurement of the blood by the Fleischl instrument.

Bacteriological and Histological Study of a Case of Landry's Paralysis.—

Julian Kapper, in *Wiener Klinische Wochenschrift* of February 15, 1900, describes a case of Landry's paralysis in which a careful examination of the urine and blood gave negative results, so far as microorganisms were concerned. This was also true of the bacteriological examination of the central nervous system four hours after death. A careful microscopical examination of the central nervous system revealed no microscopical changes; the same was true of the peripheral nerves. The writer believes that Landry's paralysis is due to an autointoxication having its origin in the intestinal tract.

Formic Aldehyde for the Destruction of Fleas, Rats, and Mice.—

In the *Journal de Pharmacie d'Anvers* for February, 1900, appears a report from Valere Haazen made to a local medical commission at

Antwerp, on the best method of destroying these pests. It was determined that formaldehyde was one of the most efficient methods of disposing of these animals. Experiments showed that mice were destroyed by a strength of two grammes of trioxymethylen to each cubic meter. A much less amount — only seven grammes — was required to destroy fleas. Young rats were destroyed by a like proportion, but old rats resisted, requiring from eight to ten grammes to kill them. The commission recommended formaldehyde for the destruction of rats in ships.

SURGERY.

The Angiotribe.—

J. R. Goffe, in the *Boston Medical and Surgical Journal* of April 12, 1900, gives a description, with cuts, of Tuffier's angiotribe. This instrument consists of a pair of thick forceps of heavy construction, having a pair of serrated jaws with a screw at the end of the handles for bringing them into close apposition, thus exerting powerful compression upon tissues. Thummin's instrument is also depicted. The principles are essentially the same as in Tuffier's, but the arrangement for closing the forceps is a lever working on an eccentric. The purpose of these instruments is to accomplish in hysterectomy the same object which is attained by the use of the lock forceps, and in a briefer space of time. The average time with the ordinary clamp forceps is from thirty-six to forty-eight hours, but experience has led operators who are using these forceps to lessen the time in which they are left in place. Finally, Doyen, of Paris, evolved the idea that the same effect upon the blood-vessels might be produced in a couple of minutes; hence the invention of the angiotribe. The credit of the invention belongs to Doyen, and Thummin's and Tuffier's instruments are but modifications upon his original instrument. With Tuffier's instrument it is claimed that a pressure equal to three thousand pounds is secured, but in actual practice much less than this is required to compress the moist tissues to the thinness of tissue-paper and to agglutinate the walls of the blood-vessels. The essential principle in both instruments is that of a heavy clamp, which has a groove along the surface of the jaw in which the tissues are not compressed which permits of the formation of a blood-clot, thus forming an additional safeguard against hemorrhage. The outer edges of the jaws are

smooth and rounded, for if left sharp they may cut the tissues, and thus the effect of the instrument be lost.

In hysterectomy the instrument is applied as any clamp would be, and if the nut has been screwed down to the required point it is held in position for two minutes. The uterus is then cut away. The writer has used Thummin's, Tuffier's, and Bissell's instruments. He finds that Tuffier's instrument is the most satisfactory, having used it in sixteen cases.

The writer claims that the angiotribe has many advantages over the former method of clamp forceps. These left in place as they are applied one after another in operation, filling the vagina, more or less impede the progress of the work. When the angiotribe is used, on the contrary, additional space is gained with each application. Again, after thirty-six or forty-eight hours, the lock forceps must be removed, and sometimes this is followed by hemorrhage, owing to the tissue adhering to the forceps and being torn as they are withdrawn. After the use of the angiotribe convalescence is smooth and complete; patients commonly complain of less pain than when either forceps or ligatures are used.

J. H. Carstons, in the *Fort Wayne Medical Journal-Magazine* for March, 1900, gives a report of the use of the angiotribe in four cases. He prefers Thummin's instrument, as he claims it is narrower, admitting of more room, and the lever is more easily worked than the wheel. He claims many advantages for the instrument, saying that it often permits of performing certain intrapelvic operations by the vaginal route which would be impossible without it, because of the difficulty of applying ligatures.

Drainage.—

Paul Morf, in the *Bulletin of the Northwestern University Medical School* of January 31, 1900, says that wounds may be divided with reference to drainage into two classes: first, those which are aseptic; secondly, those which have been infected, or are made to relieve suppurative conditions. In the vast majority of cases drainage is unnecessary in aseptic wounds. The danger of drainage is due to the fact that the skin contains normally germs which cannot be wholly removed. The drain, whether capillary or tubular, moistened by secretions, is a ready pathway for the entrance of such infection from the surface to the deeper structures. Aseptic wounds in which no antiseptics have been used have as a rule little oozing. Healthy tissue can take care of a large amount of extravasated blood and lymph. Drainage in aseptic cases is limited to those

cases where there has been much traumatism and where large areas of lymphatic vessels have been opened. Examples of this class of wounds are furnished by amputations of the breast with their attendant dissection of the axilla, amputations of the thigh and hip, and extirpations of tubercular lymphatic glands. Another class of cases is where there remain "dead spaces" which cannot be obliterated by deep sutures or other means. Examples of these are furnished by unilateral thyroidectomy and operation for carcinoma of the rectum. In most of these cases twenty-four hours is a sufficient time to leave the drain in position. At the end of that time the tissues have accommodated themselves and the dead spaces are obliterated.

In infected wounds and those made for the relief of septic foci, drainage is demanded almost without exception. Drainage of abscess empyemas and suppurating joints should be made in the location which gives the best possible escape to the secretions. A good-sized fenestrated rubber tube is to be preferred, which, if possible, is to be carried through the cavity and out at a counter-opening. As the suppuration lessens, this is to be replaced by a drain of iodoform gauze.

In the relation of drainage to the abdominal cavity it is difficult to make a general statement, but drainage is useful when pus is found free in the peritoneal cavity, as in cases of acute suppurative peritonitis; where there is localized pus formation, the suppuration being walled off by adhesions—this class of cases includes appendicular abscess, pelvic disease, and pus tubes. Drainage must also be employed in the removal of pus from a hollow viscus.

The Feeding of Patients Suffering from Peritonitis, the Outcome of Appendicitis and Other Similar Causes.—

A. J. Ochsner, in the *Louisville Journal of Medicine and Surgery* for February, 1900, says that appendicitis is by far the most common cause of acute peritonitis. The anatomical location of the appendix is such as to make its elimination from the general abdominal cavity comparatively easy, providing the surrounding structures are at rest. The cæcum, omentum, and small intestines surround the appendix and form a barrier against extension of the infection to the general peritoneal cavity. If food is given, peristaltic motion is at once established in the small intestines, and this motion serves to distribute septic material with which the intestines are in contact. Food generally gives rise to a certain amount of gas, which must be regurgitated or else pass into the colon, disturbing the ileocæcal

valve. In non-operative treatment of appendicitis we should obtain absolute rest for the diseased organ; in this way we substitute a circumscribed abscess for a dangerous acute general peritonitis. This is accomplished by prohibiting the introduction of every kind of food into the stomach, remembering that it frequently requires but a small amount of food to kill an appendicitis patient. It makes no difference whether the patient suffers from catarrhal appendicitis with or without a foreign body, or whether the appendix be gangrenous or perforated; recovery may be looked for if all food is withheld from the patient. The writer prefers to operate in all cases in which the patient is seen within the first twelve or thirty-six hours, and where the surroundings are favorable. If a longer time has elapsed, the patient is more likely to recover if oral treatment is pursued and food absolutely prohibited. In recurrent cases he prefers to operate in the interval because the conditions can be made favorable, and the incision can be so made as to avoid a hernia. He lays stress upon the prohibition of food, as he believes that if this plan were generally adopted the mortality from peritonitis due to appendicitis and similar causes would be enormously reduced. In case the attack supervenes after the ingestion of a large meal, it may be well to administer a large dose of castor oil, which will free the alimentary canal quickly and with comparative safety. This does not make the operative treatment of these cases superfluous, but it frequently changes an unfavorable acute into a favorable chronic condition.

The Relation of Anesthetics to Insanity.—

G. H. Savage, in the *Clinical Journal* of April 11, 1900, says that it may be generally accepted that anything which will produce temporary suppression or alteration in mental functions may cause lasting disorders in these functions. Anesthetics may produce delirious excitement and mania, or insensibility and stupor. Anesthetics are rarely more than exciting causes of insanity and only act in predisposed subjects. They may play an important rôle in producing insanity in highly neurotic patients, in those who have frequently suffered from mental disease or are subject to recurring attacks, or they may act as a sufficient cause in the degenerations which accompany age and intemperance. Anesthetics may act as predisposing causes of iusanity associated with the operation. He thinks that abdominal operations and those on the bowels or pelvic organs contribute the largest proportion of mental cases.

The author is not sure that one anesthetic is safer than another

in reference to the danger of mental breakdown. He has seen acute mania of a hysterical type follow the use of gas in performing a dental operation. He has seen mania follow within a few hours of a simple operation performed under other anesthetics. In two cases he has observed a mental breakdown after chloroform administered during parturition. In all the cases which he has observed in which the anesthesia was followed by melancholia or organized delusional insanity, the patients had a previous history of mental disease.

The writer describes an interesting case of stupor following anesthesia. The case was that of an elderly clergyman who had taken the anesthetic for the removal of an epithelial growth from the rectum. He passed directly from the anesthesia into a stupor, in which he took no notice of anything about him. He was sent to an asylum, where he remained about two weeks. The general health was not impaired, and the patient made an excellent recovery.

The danger of administering anesthetics to those who have had mental disease was illustrated in the case of a girl who had had an attack of delirious mania, from which she recovered. Later there was some trouble with the knee-joint, which became contracted. The writer insisted that an anesthetic should not be administered, but without his knowledge it was done, and the patient passed from the unconscious state to one of mania, which lasted for some weeks.

The writer sums up the relation of anesthetics to insanity in the following words: "An anesthetic may cause insanity; it may relieve for a time a few maniacal cases; it may be given to the insane with impunity as a rule, when examinations or operations are necessary; there is danger that it may lead to a fresh attack of insanity if it is given to patients who have had previous attacks, and to those who are subject to recurrent insanity of any form."

Congenital Dislocation of the Hip.—

W. E. Wirt, in the *Cleveland Medical Gazette* for April, 1900, has an article on the diagnosis and treatment of this condition. He believes that the affection is more common than is generally supposed, as many of the cases are attributed to other conditions. In the New York City Hospital for Ruptured and Crippled Children, out of 9000 patients, there were but twenty cases of this condition. He believes that the rarity is reputed rather than real. In this condition the acetabulum has a more or less imperfect rim, or it may be entirely wanting. The head of the femur may be absent or normal, but it is usual to have some abnormality present. The neck of the femur is shorter or more horizontal than usual and is sometimes absent. The

ligamentum teres is generally elongated, and when it helps to sustain the body weight it is hypertrophied. The capsular ligament may be found loose and unrecognizable, or when it has sustained weight it is thickened and stretched. The usual form of dislocation is upward and backward on the dosum of the ileum; sometimes the dislocation is forward and downward. Above and behind the outer side of the acetabulum a new growth of bone may be found forming an upper rim to the new socket. The point of suspension in upward and backward dislocation is posterior to that of the normal hip; it carries it beyond the center of gravity, which is followed by a downward tilting of the anterior portion of the pelvis. This causes a forward bending of the spine, or lordosis. In the few cases in which the dislocation is forward, the lordosis is wanting.

The diagnosis of congenital dislocation of the hip is based on the attitude of the child while standing—the gait, the prominent hip or hips, the shortening of the leg if unilateral, the pain, delayed walking, limitation in the motion of the joint, crepitation, the movement of the head of the bone over the pelvis, and above all the relation of the head of the femur to Nélaton's line. The affection is commonly unrecognized until the child begins to walk. In some cases where the dislocation is single, the shortness of the leg may attract attention. There is not always delay in walking, but the gait is always typical—a wabbling or duck-like movement.

Cancer Infection in Relation to Operative Treatment of Cancer.—

J. Bland-Sutton, in the *Clinical Journal* of January 24, 1900, says the cause of cancer has been earnestly sought for, but as yet it has not been found. The disease is still insidious in origin, of steady progress, rebellious to treatment, and distressing in its termination. When extensive operations are necessary for the removal of cancer the result is often questionable, and one of the most important complications is cancer infection. These tumors have no proper limits, and it would be impossible for an expert microscopist to tell exactly where the morbid growth leaves off and normal tissue begins. This constitutes one of the worst difficulties in dealing with them surgically. Again, a common method of extension of these growths is by way of the lymphatics, and the extent to which this infection has taken place cannot be accurately defined in a given case. The old rule that carcinoma spreads along the lymphatics and sarcoma by the veins is approximately correct. This refers to those cases in which the abdominal wall has developed cysts after ovariotomy; these he thinks are due to the infection of

these structures during the removal of the diseased ovary. It is this accidental infection of the cut surfaces that leads to that rapid dissemination of a cancerous growth which sometimes follows extirpation, in some cases removal seeming only to accelerate the disease. In cancer of the breast recurrence is due to their removal or cancer infection. It is difficult, particularly in thin persons, to remove the entire gland. Occasionally the surgeon removes a cancerous breast, the pectoral muscles, the axillary glands and lymphatics, together with their surrounding fat, and this is followed by wide-spread tumors infiltrating the skin that was raised in the operation. This result is due to the distribution of cancer cells in the course of the operation. He especially recommends in operations upon the breast for cancer that the lymphatics be followed into the axilla and the tissues removed *en masse*, avoiding the opening of the lymphatic channels and the dissemination of the cancer cells. This method is far superior to the dissection of isolated glands.

Papilloma of the Bladder.—

F. A. Southam, in the *Medical Chronicle* for April, 1900, describes two cases of papilloma of the bladder—one in a man 64 years of age, and the other in a man of 45. In both the early symptom was a painless hematuria; this, the writer thinks, is accounted for by the vascularity of the tumor and the length and delicate structure of its villous processes, in which numerous fine capillary vessels are contained. The muscular contraction of the bladder wall during micturition, by compressing the base of the tumor, causes congestion of the capillary vessels, which readily rupture and allow of the escape of their contents. Very frequently portions of the villi become detached, this being accompanied by bleeding. The absence of pain for a considerable time in their course is also explained by their soft structure, none being felt even at the end of micturition, when the bladder has emptied itself and its contracted walls are pressing upon the growth. This is very different from what occurs when the bladder is filled with a firm infiltrated growth. In the latter pain and irritability of the bladder are always early symptoms, often preceding the onset of hematuria. Though the recurrent attacks of painless hematuria may be the only symptoms for months, or even years, in cases of papilloma of the bladder, it generally happens that sooner or later cystitis is set up, being often excited by retention of blood-clots in the interior of the viscus and the straining efforts which attend the attempts to expel them. Then there is superadded not only pain, but all the other symptoms of cystitis. It is unusual for any other condition to give rise to

profuse hematuria, with the exception of malignant tumor of the kidney. In the absence of any indication of renal growth, profuse hematuria of long duration, with blood of a bright-red color and the appearance of clots in the urine, usually indicates a vascular tumor of the bladder.

The Practical Value of the White Blood-count in Surgical Cases.—

J. C. Hubbard, in the *Boston Medical and Surgical Journal* of April 19, 1900, has searched the surgical records of the Massachusetts General Hospital since early in 1895, to ascertain the practical value of this procedure. In all there were 189 non-inflammatory cases, such as cysts, fibroids, extra-uterine pregnancies, tumors, gall-stones, etc., giving an average count of 8811. In seventy-one cases of inflammation without formation of pus there was an average count of 12,645; in 299 cases with pus formation the average count was 17,696. These averages show a slight increase from the non-inflammatory and again to the purulent cases. In studying individual cases the range of blood-count was very great, varying from 4000 to 25,000; non-inflammatory 5000 to 32,000; and in the purulent from 4800 to 47,000. The counts that are common to all three are somewhere between 5600 and 25,800. As most of the counts fall within these limits, they are of no practical value to the surgeon in the diagnosis of an individual case, and the blood-count should have very little weight as compared with the physical signs in making a diagnosis. With our present knowledge of the causes and variations of leucocytosis it is impossible for us to deduce simple rules which shall be of use to the surgeon at the bedside.

In the discussion on this paper Arthur T. Cabot said he regarded the leucocytosis not as a pathognomonic sign of suppuration, but as an indication which was to be taken in conjunction with other symptoms, and which, when thus used, was of aid in the diagnosis.

Ambulatory Treatment of Fractures.—

C. D. Lockwood, in the *Illinois Medical Journal* for April, 1900, says the ambulatory treatment of fractures was recommended by Berard as early as 1833. Among modern surgeons Hessing was the first to successfully employ this form of treatment. Surgeons have been slow to adopt the method. The writer defines the ambulatory treatment to be the application of such devices as will enable the patient to be put in an erect posture while bony union is taking place. He thinks that this method is especially applicable in fractures of the leg in children and those of the femur in adult persons, and in all simple and uncomplicated fractures of the lower extremity

in young adults. The theoretical dangers from the ambulatory treatment of fractures are pressure sores and muscular contractions. An examination of the published cases shows that embolism is no more likely to occur when the patient is about than when he is in the horizontal position. In fact, those fractures accompanied by extensive injuries to the soft parts and comminution of the bone are exactly those in which the ambulatory treatment is not to be advised. Pressure sores are due in every case to ill-fitting appliances, and if these occur the surgeon is responsible. Contractures can be overcome by careful attention to the after-treatment and the application of massage as recommended by foreign surgeons. The dangers attending ambulatory treatment are largely theoretical and may be practically disregarded. The early application of ambulatory apparatus, with massage, is the ideal treatment for fracture.

A Case of Fatal Sphenoidal Suppuration.—

Samuel Lodge, in the *Laryngoscope* for March, 1900, describes the case of a man 31 years of age who was admitted to the Royal Halifax Infirmary, May 15, 1899. At that time he complained of constant pain in the right ear and the right side of the face which had existed for six months. For the last two months the right side of the face had been swollen, and there had been a copious discharge of pus, often mixed with blood, from the right nostril. The temperature was 100°. The ears were quite normal. No pus was found in the antrum of Highmore. An alkaline wash was prescribed for the nose. The patient continued to improve for about ten days, when there was an evening rigor and the temperature rose to 102.6°. A few days later the patient became comatose and died.

Upon opening the skull the base of the brain was found bathed in thick pus, extending as far forward as the pituitary body and backward over the pons and medulla. The cribiform plate of the ethmoid and the cells were normal. There was necrosis of the walls of the sphenoidal sinus, and a probe readily passed from the base of the skull through this sinus into the nose. The sinus was full of thick muco-pus.

Excision of the Cæcum with End-to-end Anastomosis.—

F. H. Wiggin, in the *Journal of the American Medical Association* of April 14, 1900, describes an exceedingly interesting case of a woman 54 years of age, who gave a history of recurring attacks of appendicitis covering a period of ten years. Six weeks before coming under observation she had a more severe attack than usual, accompanied by constitutional symptoms. She was unable to take

nourishment, and had a constant pain in the right iliac region accompanied by a persistent nausea. There was marked mental depression with emaciation. A tumor was found in the right inguinal region and an operation undertaken. The cæcum was entirely resected, and an end-to-end anastomosis made between the large bowel and the ileum. The bad general condition of the patient made a long convalescence, but eventually she made a perfect recovery.

An examination of the tumor showed the muscular tissue of the intestine infiltrated with round cells and a large mass of cicatricial tissue. Many of the blood-vessels showed chronic obliterating endarteritis. There was no indication of malignant disease.

The Usefulness and Mistakes of the X-ray.—

J. Rudis-Jicinsky, in the *American X-Ray Journal* for February, 1900, says that the value of the *x*-ray in general surgery in locating foreign bodies is settled. Its use as a therapeutic agent and in medicine is still a matter for study and experimentation. He emphasizes the necessity for the more general use of the *x*-ray. During the last three years he has made 3800 exposures and has not had a single burn. For such work it is necessary to have an apparatus capable of giving a twelve- or fourteen-inch spark, and an interrupter giving about thirty or thirty-four breaks per second. In diagnosis the *x*-ray is useful; it will distinguish rheumatism from gout, and will show malposition of the vertebræ or distortions of the hip-joint. He refers to the fact that one case of extra-uterine pregnancy has been recognized by the *x*-ray. Arterial sclerosis is detected, as is aneurism of the aorta, dilatation of the heart, central pneumonia, emphysema, and pulmonary tuberculosis. The size of the stomach can be made out and its peristaltic action felt.

Celluloid Thread.—

W. W. Keen, in the *Philadelphia Medical Journal* of March 10, 1900, speaks of Pagenstecher's celluloid thread. He recently received some from Germany and examined the product. He finds that its tensile strength is very great, even for small threads; it is very flexible, and does not easily become untied. It is not easily infected; it was received in an ordinary pasteboard box, and after handling without sterilizing the hands it contained very few organisms. The tensile strength of the thread is increased by dry heat. It absorbs fluid to about 41 per cent, which seems to be its one disadvantage. In his hospital work he has used it with great satisfaction, but not for a sufficient time to admit of a final opinion of its merits.

THERAPEUTICS.

Guaiacol in Malaria.—

Charles J. Whalen, in *Merck's Archives* for April, 1900, says that quinine has been considered the great remedy in malaria, but that obstinate cases of intermittent fever are observed, especially where there are parasites such as are acquired in tropical or subtropical latitudes. In May, 1899, he published the results in four cases of obstinate malaria treated with guaiacol. He brings the history of these cases up to date and adds a record of nine others. In most of these quinine had been used and a cure was not effected. During the past year numerous writers have spoken of the value of guaiacol in various forms of malaria. The careful examination of this literature and a reference to his own cases enable him to affirm that guaiacol surpasses any remedy so far recommended for malaria. In his experience it has cured every case, in some of which quinine had been tried and failed.

The history of one of these cases is very interesting, as it indicates the severity of the infection and the ease with which it was controlled by the remedy. The patient was taken ill at Santiago, Cuba, July 28, with dysentery, and had his first chill August 5. Every day, at the same hour, the chill was repeated. He was sent home, reaching Chicago September 7. His weight at the time was 115 pounds. The spleen was palpable. The blood showed endoglobular plasmodia with actively motile granules and a number of crescents. The patient did not tolerate quinine well, but was able to take twenty grains a day when combined with dilute hydrochloric acid. He was in the hospital twenty-five days and gained fifteen pounds in weight. He then went to New York City, where he remained sixty days. All this time he continued to take quinine. The last week of his stay in the East the quinine was discontinued, and on the day he left for Chicago he had a severe chill with a temperature of 106°. These chills continued to recur, at intervals of twenty-four days, for three months. In each attack he was confined to his bed from four to six days. April 4, 1899, he was having chills every second day, the temperature running as high as 106°. He was placed upon five drops of guaiacol after meals, with instructions to increase the dose a drop each day until twenty drops was reached. There were two chills following the administration of the guaiacol, but the second was a light one, and from that time there was no more fever, and on May 1 the remedy was discontinued.

On May 4, and again on the 6th, there was a return of the chill, and the drug was resumed and administered until June 1, at which time a gradual reduction was begun in the dose, and it was discontinued June 18. From that time the patient continued to improve, finally recovering from the malarial cachexia.

Hot Air in Chronic Rheumatism.—

T. L. Satterthwaite recently read a paper before the New York Academy of Medicine on this subject, an abstract of which appears in the *Medical News* of April 14, 1900. He says that the application of superheated air was originally suggested in medicine by Turkish baths. A patient in a simple warm chamber rebreathes the products of his own respiration. In a Turkish bath the temperature cannot be raised above 170° F.; in the hot air, parts of the body can be subjected to a temperature of 400°. The main idea in the apparatus so far devised for giving the hot-air treatment has been to keep the skin dry while the air is heated all around the limb or part of the body that is to be subjected to the high temperature. For this purpose, when the temperature to be borne is not very high, the part is simply covered with a Turkish towel. When temperatures above 300° F. are to be employed, the part must be carefully wrapped and no spaces allowed to exist between the cloth and the skin; otherwise the perspiration at these points will become so heated as to scald the patient. Machines properly constructed should be so lined with asbestos that the patient may not come in contact with the heated metal. Glycosuria is not a contraindication for the hot-air bath, but in anemia, fatty degeneration, and arterial sclerosis it may be dangerous. The rise of pulse and temperature, and a certain tendency to increase of blood-pressure, would seem to make it unadvisable to use it in such cases.

When a limb is subjected to hot-air treatment, there is first a lessening and then an increase in the circulation of the skin, with the injection of the peripheral capillaries and a sense of warmth. The pulse gradually rises until it is from ten to twenty-five beats higher than it was when the treatment began. There is a rise of temperature of from one to five degrees. There is usually an increase of respiration up to twenty-two or twenty-four per minute. A general sense of comfort comes over the patient and continues as long as the treatment is doing good. After a time, which is variable in different patients, a nervous depression supervenes, which should not be allowed to continue. As a rule the treatment should stop just short of this, and then it will have its maximum effect.

Exclusive Rectal Alimentation.—

D. L. Edsall, in the *University Medical Magazine* for March, 1900, on the question of rectal alimentation, comes to the conclusion, which was emphasized by Fleiner, that exclusive rectal alimentation is a very uncertain method of sustaining the vital processes, believing that nutrition cannot be maintained in this way. Much the same view has been sustained by v. Leube, Ewald, and others. It is often contended that patients gain weight and improve greatly in general condition after instituting rectal alimentation, and this is used as proof that persons may be completely nourished in this way. It is quite possible that in isolated cases the bowel may tolerate such large quantities and absorb so much of what is given that sufficient food is received by the tissues, but such cases are purely suppositions, and it has never been shown that they exist. It is probable that most persons who need rectal feeding absorb less from the bowel than healthy subjects, since they are commonly greatly reduced when rectal alimentation becomes necessary, and assimilation suffers with the other functions. The amount of food actually received by the tissues in such cases is even less than the results obtained by most investigators, as such subjects have commonly been in good or fair health. Even a gain in weight and some general improvement cannot be considered satisfactory evidence that enough food is being absorbed. In most cases that are fed by the rectum, the conditions for which the feeding is undertaken have previously resulted in very little water being taken; consequently this is rapidly supplied by the rectal enemata, with a prompt improvement in the weight and in the general condition. Gain in weight is therefore apt to be illusory and does not point to the fact that the patient is being properly nourished. Exclusive rectal alimentation cannot provide complete nourishment for the tissues, but is only a measure by which we temporarily reduce tissue loss and tide a patient over a brief period in the hope that his stomach will again become equal to the reception and digestion of food.

Electrolysis in Glandular Urethritis.—

George Walker, in the *Maryland Medical Journal* for March, 1900, says that glandular urethritis is an exceedingly obstinate condition which resists all the usual local applications. Littre's glands are scattered throughout all the spongy portion of the urethra, being most numerous toward the bulb. When diseased these glands can easily be recognized by the endoscope. Thus seen there is a slight bulging of the urethral mucous membrane which corresponds to a

swollen or distended gland. In the center of this elevation there is a slight depression, which is the glandular orifice. Around this, for a distance of from one-half to one millimeter, there is a hyperemic zone. In some places only a red elevation is noted. In some glands a thick plug of secretion protrudes from the opening, and in some a red dot is visible, no swelling or orifice being present.

The writer has used Kollman's electric needle. This consists of a slender steel or German silver sound about eight inches in length, gradually tapering toward the distal end, at which point a platinum needle is fixed. The body of the instrument is insulated by a rubber cover. In use the needle is attached to the negative pole of an ordinary galvanic battery. When the enlarged and swollen gland is observed in the endoscope, the needle is carefully introduced through the tube and inserted directly into the orifice of the gland for a distance of from one-half to one millimeter. Soon a white froth can be seen around the needle. The current is allowed to flow from thirty seconds to three minutes, but from three to five glands are usually destroyed at one sitting, and the strength of current is from four to six milliamperes. The treatment is usually followed by a decided urethritis, accompanied by a copious purulent discharge, which lasts for several days. After the irritation has entirely subsided, which usually requires from seven to ten days, another series of glands are treated. The number of glands infected varies from fifteen to thirty.

The Treatment of Acute Articular Rheumatism.—

H. Dayton, in the *Medical Record* of April 7, 1900, gives a *résumé* of the treatment of rheumatism at the New York Hospital. Alkalies have not proven satisfactory in many acute cases. Internally sodium salicylate is practically relied upon in doses of ten to fifteen grains every three hours, none being given during the night. The frequency of these doses is reduced as the pain and temperature abate. The mild toxic symptoms which sometimes occur are met by the administration of thirty grains of sodium bromide with each dose of the sodium salicylate. This is done where it is thought desirable to push the sodium salicylate. If sodium salicylate is not well borne by the stomach, salol is employed in five-grain doses each three hours. Salophen has also been used in fifteen- to twenty-grain doses. In some cases the salicylate of sodium has been administered by the rectum without symptoms of local irritation. Internal medication is supplemented by the local application of methyl salicylate, which rapidly relieves the pain in the affected joints. This application is renewed daily until the local symptoms subside.

Many cases with gastric irritability, which could not be treated by internal remedies, have been relieved by the local application of methyl salicylate. It is applied upon a thin compress of gauze wrapped around the joint and covered with gutta-percha, which is held in place by a bandage. The initial signs of burning are soon followed by relief of local pain. That the drug is rapidly absorbed when employed in this way is shown by the fact that its excretion in the urine has been found to begin within thirty minutes from the time of application to the unbroken skin. Rheumatic hyperpyrexia is seldom met with, but when encountered is treated by large and frequent doses of sodium salicylate and the tub bath at a temperature of 65° F. every three hours.

Serum Therapy in Traumatic Tetanus.—

M. Loeper and R. Oppenheimer, in the *Archives Générales de Médecine* for April, 1900, report five cases of traumatic tetanus treated with antitetanic serum. This furnishes them an opportunity of studying the value of serum therapy in this disease, and of the best method of introducing the serum into the system. In addition, two carefully prepared tables are given in which subcutaneous injections are compared with intracerebral and intravenous injections. They have collected 144 cases of the subcutaneous treatment, fifty-nine of the intracerebral, and eleven of the intravenous. Their conclusions are that the intracerebral injections in tetanus have not furnished results comparable with what might have been expected, from the experiments upon animals. The statistics show that it is inferior to all other methods of treatment, probably due to the inherent dangers of the introduction. The subcutaneous injection at this time appears to be the most rational, as it admits of an accurate dosage according to the intensity of the process. Given subcutaneously, the antitetanic serum seems to cure most of the subacute cases and a certain number of those which are grave. The intravenous injection, while only tentatively undertaken and but little known, is deserving of further study. Perhaps this will prove to be the method of choice in desperate cases.

Ichthalbin.—

Of the late additions to our list of remedies, none has proven more satisfactory than ichthyol. The reports regarding it leave no question as to its efficiency in cases of intestinal fermentation and chronic inflammations of the intestinal tube. Its disagreeable taste and unpleasant eructations which follow its administration have, to

a considerable extent, lessened the usefulness of the drug. In ichthalbin it is claimed that we have all the valuable properties of ichthyol, devoid of many of its unpleasant properties. According to A. G. Servoss, in *Merck's Archives* for April, 1900, ichthalbin is a combination of ichthyol and albumin which is insoluble in the acid juices of the stomach, but when it reaches the alkaline fluids of the intestines it is decomposed. This permits of the ichthyol acting on the intestinal mucous membrane. The albumin which forms a part of the ichthalbin has no therapeutic action, but merely serves to carry the ichthyol past the stomach. Ichthyol is a most valuable antiseptic. This is probably due to the large amount of silver which it contains. The writer gives a number of cases in which there are more or less grave intestinal complications which were relieved by the drug. He sums up its advantages as follows: It is wholly tasteless unless administered in an alkaline medium; it is best given dry on the tongue or in capsules, the doses to be employed being very indefinite, as it is a non-poisonous substance. It is invaluable as an intestinal antiseptic, and at the same time stimulates nutrition.

Diet in Typhoid Fever.—

F. A. Packard, in the *Therapeutic Gazette* of April 15, 1900, gives a very careful review of the recent literature regarding the diet in typhoid fever. The rules for liberal feeding advocated by Bushuyev, a review of which was recently published in MEDICINE, he thinks are hardly practical for the majority of patients, but is convinced that there is sufficient to warrant greater liberality in the diet of typhoid fever cases. He thinks that increase in the articles of diet that are used is safe, and if assimilated must be of material aid in combating the systemic effects of the typhoid poisoning. In feeding these patients we must always bear in mind that in fever digestive capacity is diminished, but it is possible that we have erred too much on the side of safety, and that at least toward the end of the fever we could, by giving a more liberal diet, not only shorten the period of convalescence, but discharge patients in a condition which will allow of their earning a livelihood in a shorter space of time than under the ordinary method. It is apparent from studying the records that hemorrhages are not more frequent with a liberal and mixed dietary. The dread also of producing relapse by too early feeding is probably without foundation, as is shown by the frequency of relapse without any change in the diet, and its frequent absence after forbidden indulgence.

Continuous Use of Digitalis in Heart Troubles.—

J. Groedel, in the *Practitioner* for April, 1900, says that cardiac insufficiency is an inevitable result of advancing heart changes. Compensation is established in most cases of valvular disease and may last for months or years, but if the patient lives there is sure to come a time in which heart failure is more or less pronounced. In those cases he recommends continual administration of digitalis, and advises that we should not wait until signs of want of compensation develop, such as dropsy, anemia, and tachycardia. He recommends that the digitalis be given in doses of from eight to ten grains, once each week. At such wide intervals the drug has no cumulative effect, but during its administration the quantity of urine should be carefully determined, and if it is not augmented the drug should be withdrawn. In the great majority of cases the digitalis is well borne by the patient, and the charge which is made that the drug causes a loss of strength and increases the weakness of the patient is unfounded, these changes occurring as a result of the disease for which the drug is given and not of the drug itself. He is convinced that where fatty degeneration is markedly benefited by digitalis there is sometimes a subjective cure of these cases.

The Treatment of Follicular Tonsillitis.—

In follicular tousillitis there is a distention of the crypts with accumulated secretion and bacteria. The application of remedies or the use of gargles only reaches the surface of the organs and does not go down to the bottom of these crypts in which the disease is located. Some writers recommend the emptying of the tonsillar crypts by squeezing the gland with considerable violence against the lateral wall of the throat, using for this purpose the finger or the bowl of a spoon. The operation is quite painful, if thoroughly done, but recovery is rapid. For treating these cases, M. A. Goldstein (*Laryngoscope*, April, 1900) describes two instruments. One is a scoop mounted upon a curved shaft, which is to be used in curetting the follicles. It consists of an oval, blunt, miniature spoon, with a bowl of sufficient size to engage the entire contents of a single follicle. The shaft is about six inches long and is made to fit in the universal handle employed for the laryngeal mirror. After the tonsillar crypt has been emptied by the curette, a flexible applicator is wound in cotton and dipped in pure guaiacol and carried to the bottom of the crypt. In cases seen in the early stages two or three applications will effect a cure.

Methyl Blue in Inoperable Uterine Cancer.—

H. R. Coston, in the *Therapeutic Gazette* of April 15, 1900, describes the case of a woman 52 years of age who had a uterine cancer involving the vagina. There was a roughened and infiltrated area extending upward from an inch above the vulvo-vaginal orifice, involving the entire circumference of the canal and cervix. This surface bled profusely on the slightest touch. The left broad ligament was thickened and the inguinal glands enlarged and sensitive. The examination was very painful. A speculum did not bring the uterus into view. The disease had extended so far that operation was out of the question. A three-per-cent solution of methyl blue in equal parts of alcohol and water was applied over the entire diseased area. This was followed by a decrease in the hemorrhage, the tissues became less fragile, and the infiltrated area softer. At the end of two months the hemorrhage had almost ceased and the ulcerated surface had healed, excepting at the fornix, where it seemed to be continuous with the infiltration of the broad ligaments. Four months after beginning treatment the patient's condition was fair, she having but an occasional slight hemorrhage, and had improved in weight.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Salol and Petroleum in the Treatment of Infantile Diarrhea.—

W. E. Fothergill and John Penney (*Medical Chronicle*, April, 1900) have recently attempted a study of the value of salol and petroleum in the treatment of infantile diarrhea in the Charlton-on-Medlock Dispensary, Manchester. Simple record blanks were prepared, giving the beginning of illness, the character of the feeding, number of bowel movements, and character of the stools. One or the other drug was given a fair trial before resorting to other treatment. The effect of changes of diet was, so far as possible, eliminated by avoiding all changes except those in which there was something obviously wrong in the method of feeding. At the end of the "diarrhea season" they found that they had seventy-one cases with reasonably complete notes. The ages of the children varied from two months to two years. Only eight of the seventy-one children fed entirely on the breast, and of these one died. Of the sixty-three bottle-fed infants, only three died. In eight cases recovery did not result from the use of petroleum alone. Sixty of the children made good recovery with these

drugs, the diet being an ordinary one suitable to the child's age. Salol alone was employed in thirty-six cases, the drug being given in the form of powder, one-half grain every three hours being the minimum dose, and three grains every four hours the maximum dose. Two children went from bad to worse, and the treatment was changed, but both died. In six cases the result of treatment was moderately good, but recovery was slow and had to be aided by the use of bismuth and opium. Twenty-eight children recovered on salol alone. Improvement was usually rapid, and the motions were normal in from two to seven days, although some of the children had been ill for a fortnight previous to commencement of treatment. Salol seems to be irritating to the stomach when given in the form of powder, and it should be mixed with some mucilaginous substance to prevent its acting as a mechanical irritant.

Petroleum was used in thirty-four cases, only four of which were breast-fed. The preparation used was an emulsion containing 33 per cent of petroleum, and the doses given varied, the average being about one drachm three times daily. Each dose therefore contained about twenty minims of petroleum. One of the children died after various treatments had been tried. In two cases the results obtained on petroleum were unsatisfactory, and salol was substituted at the end of a week. In the remaining thirty-one cases recovery occurred rapidly and completely, without any treatment beyond the administration of the petroleum emulsion. There was no derangement of the stomach, and the vomiting ceased, as a rule, almost before diarrhea was checked. The movements began to be less after two or three days and rapidly resumed their normal smell and consistence. It was further observed that the treatment in some way favored recovery from the bronchial catarrh, which accompanied the diarrhea in a large proportion of the cases.

In speculating on the probable influence of petroleum, the writers state that it is observed that practically the whole quantity ingested can be recovered from the feces. This, however, they think is not borne out by clinical work with this substance, as they are convinced that it exerts an influence on the mucous membrane other than that of the alimentary canal. Its action in cases of bronchial and vesical catarrh is only explainable upon the theory that it is absorbed from the intestine and excreted by various organs. The writers affirm the great value of salol and petroleum in the treatment of diarrhea. They have continued to use these remedies in cases of intestinal catarrh, not dependent upon summer temperature. They have

found them especially useful when given after calomel or mercury and chalk. The various forms of infantile diarrhea can, as a rule, be treated successfully without the use of opium in any form, and also without the "astringents" which have been so largely used and whose innocence is so very doubtful.

Extra-abdominal Shortening of the Round Ligament for Posterior Dislocation of the Uterus.—

A. H. Goelet, in the *Philadelphia Medical Journal* of April 28, 1900, says that posterior dislocation of the uterus sooner or later will lead to chronic invalidism, unless promptly and permanently rectified. Pessaries do little good in this condition, though they may be of temporary benefit in recent cases. At best they are only a makeshift. The pessaries are only useful where there is subinvolution with a consequent relaxation of the ligamentous supports, and where there is a hope of altering these conditions by treatment. None of these conditions can be considered cured unless the uterus is held in a normal anterior position without artificial support. The objections to shortening the round ligament in posterior displacements would not have been so pronounced if the indications for the employment of this operation had been better understood. The technique for the original operation of shortening the round ligaments has been so modified and improved that it has become an ideal operation.

The technique of this operation is as follows: An incision one inch in length is made over the internal ring, parallel with Poupart's ligament. This extends to the external oblique muscle. The ligament serves as a landmark. An incision is made into the aponeurosis of the external oblique muscle, one-fourth of an inch long and about two lines above Poupart's ligament. A blunt hook is inserted and the ligament is caught up and brought out. To avoid handling the ligament, a stout pedicle ligature is passed through the loop as soon as it is drawn up through the incision, and the two ends are caught with the hemostatic clamp close to the ligament. Traction is then made on the round ligament, and the peritoneum that is drawn out with it is stripped backward. The ligament should be drawn out sufficiently to bring the fundus well forward, and the amount of redundant ligament will measure from five to seven inches. When drawn out, the first sustaining suture is introduced. This is silkworm-gut and secures the ligament as it emerges through the incision in the roof of the inguinal canal. It is passed from above downward and enters the integument a quarter of an inch

from the upper margin of the incision. The redundant loop of round ligament is secured by being woven under the fibers of the external oblique muscle. A second suture is inserted through the integument and penetrates the thick portion of the round ligament. The operation made in this way can be done in from fifteen to twenty minutes on both sides. Owing to the fact that the parts are handled but very little, union by first intention is the rule. The sutures can be removed on the tenth or twelfth day, and the patient permitted to get up at the end of two weeks. Operation is applicable only when the uterus is freely movable and can be held in a corrected anterior position by a vaginal pessary. Out of 150 cases operated upon by this method, there have been no failures and no relapses. The use of a pessary for a month or six weeks after the operation is enjoined, to afford time for contraction of the uterine supports and as an additional safeguard against prolapse, the round ligament only serving to hold the fundus forward.

Pain as a Symptom of Ectopic Pregnancy.—

H. C. Coe, in the *Medical News* of April 21, 1900, discusses pain as a symptom of ectopic pregnancy. Apparently nothing could be easier than the diagnosis of this condition, but every operating surgeon has frequently met it where it was entirely unsuspected, or has opened the abdomen in a case which presented almost typical symptoms and found only diseased adnexa. The writer gives a number of cases illustrating the difficulties of diagnosis and the significance of pain as related to this condition. The pain will vary according to the location of the ovum, and whether the tube is free from adhesions. If implanted near the fimbriated extremity it may be expelled into the peritoneal cavity at an early stage. In these cases pain may be comparatively slight, and they form a class which is so often taken for a diseased appendix. Pain alone, when not accompanied by a clear history of menstrual irregularity, symptoms of pregnancy, and the appearance of a tumor at the side of the uterus or in Douglas's pouch, is to be regarded as an indication of extra-uterine pregnancy only under certain conditions. Such are found when the pains are of a sharp, colicky character, distinctly located on one side, attended by faintness and followed by remission. The pulse is accelerated during the attack, but there is no rise of temperature; the latter commonly distinguishes ectopic pregnancy from inflammatory conditions. The violent tearing pain attending intraperitoneal rupture is accompanied by the appearance of internal hemorrhage. In extraperitoneal rupture the symptoms vary accord-

ing to the amount of blood lost, but soon subside, being succeeded by the usual evidences of pressure, resulting from a mass in the folds of the broad ligament, which displaces the pelvic organs. A persistent pain following an acute attack may indicate localized peritonitis.

Spontaneous Rupture of the Uterus.—

Bradford Woodbridge, in the April 7 issue of the *Medical News*, reports a case of this rare accident, which has been said by Etheridge to occur about once in every 4000 labor cases. The woman was the mother of one child, and when the reporter was summoned she believed her confinement to have been due about a week. There were pains, but these were so slight that the patient doubted their significance, and examination showed no dilatation of the os. During her period the woman had been exceptionally well. In the previous labor the attending physician had resorted to the use of forceps. This birth was thought to have been a little premature, owing to the mother receiving a blow on the abdomen a few days before.

Three hours after examination she went into collapse. The fetal protuberances of the abdomen were no longer visible, and pressure gave a "boggy" feel. The fetal heart-beat could not be heard, and the diagnosis of "accidental concealed hemorrhage" was made. The collapse was not overcome by stimulants, and the patient died thirty hours after the onset of the trouble. Upon opening the abdomen two hours later a thick layer of clotted blood was found between the abdominal wall and the uterus. Across this organ was an irregular transverse tear, through which the left shoulder and hand of the child protruded into the abdominal cavity, the rest of its body being firmly grasped by the contracted uterine muscle.

FORENSIC MEDICINE.

A Singular Contract Between a Physician and a Specialist.—

According to the *Journal of the American Medical Association* of March 17, 1900, a physician who had been suffering from a sore on his face, which he himself could not cure, called on another doctor of whom he had heard. The latter, a specialist, termed the affection lupus, or "lupus cancer." A contract was entered into, that in the event of a cure the physician should give the specialist a certificate of his skill and proficiency, or $5000 in cash. A cure was effected, and the specialist had recourse to the law to enforce the

contract. A trial resulted in a judgment for the defendant and against the specialist, the judge holding that the $5000 which the specialist testified was to be paid if the certificate was not given was a penalty, and therefore not recoverable. The Supreme Court of Pennsylvania holds that this construction of the contract is not valid, and not based on a true relation of the contracting parties. The Supreme Court holds that the defendant was a member of the medical profession, knowing what his trouble was, and presuming to know what would be a proper charge for the services; hence the Supreme Court says it cannot approve of the view which holds that the $5000 was a penalty. It is to be regarded as an alternative mode of payment agreed upon by the parties capable of intelligently entering into a contract. It accordingly reversed the judgment and placed the suit back for retrial, and ordered the court to instruct the jury that if the specialist's testimony is to be believed, then the defendant must pay the amount agreed upon.

Hanging.—

E. W. Holmes, in a paper before the Philadelphia County Medical Society (*Journal of the American Medical Association*, April 21, 1900), reports some investigations in hanging. He carefully compares suspension and strangulation, and gives some consideration to the methods of judicial infliction of the death penalty by hanging, with an analysis of the symptoms of hanging and resuscitation. In the majority of legal executions by hanging death does not occur from fracture of the vertebræ, but from strangulation. Suspension is a frequent means of suicide; out of 368, 189 were by hanging. The sensations produced by hanging are: First, a flash of light before the eyes; a hissing sound in the ears; a bulging of the eyes and a sense of weight on the feet; and then a sense of suffocation, followed by unconsciousness.

A Cancer Specialist Not a Competent Witness.—

In the *Journal of the American Medical Association* of April 21, 1900, is described the case of a physician who brought an action to recover a fee of five hundred dollars for treating two cancers, one on the face and one on the hand of the person against whom the action was brought. The deposition of a "cancer specialist" was offered on behalf of the defendant in the trial and excluded. The issues were found for the plaintiff, and upon plea this exclusion of the testimony of the cancer specialist was relied upon for reversal. The Court of Appeals of Kansas, before whom this case was finally

decided, found that there was no error in excluding the testimony, on the ground that it showed that the witness was incompetent to testify as an expert. Speaking of the competency of the witness, it says competent testimony concerning the value of the plaintiff's services should be given by men of science—physicians of training, knowledge, and experience. The witness testified that he was not a physician, and it did not appear that his preceptor was himself a physician, and his opinion was not based on reading and study. On these grounds the Court of Appeals held that the testimony was properly excluded, and in accordance with this view affirmed the judgment for the plaintiff.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the trausactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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ORIGINAL ARTICLES.

STERILITY IN THE MALE.

BY EMIL RIES, M.D., CHICAGO.
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When a husband and wife who desire a family find themselves without offspring after some time of married life, as a rule the wife is urged to seek medical advice. The physician whom she consults is frequently, all too frequently, satisfied with making a gynecological examination. He makes his diagnosis and arranges his treatment according to the data furnished by such an examination, which reveals to him a more or less likely cause of the sterility. Such a procedure is always unscientific and frequently the cause of much unnecessary suffering. For what is the use of treating the wife for sterility if nothing is known concerning the condition of the reproductive organs of the male?

The results of a number of careful clinical as well as pathological investigations have proven the male to be the cause of sterility of matrimony in over 30 per cent of all sterile matrimonies, and this fact alone suffices to discredit all attempts at treatment of the female alone in cases of sterility, unless it is determined that the male is in full possession of normal organs with normal secretions.

The sterility of the male may be of two different kinds—it may be due to impotentia coeundi or to impotentia generandi, to an inability to perform the sexual act, or to a lack of normal secretions.

The discussion will be limited here to the latter of these defects, to the impotentia generandi, and more especially one kind of this species. Under the head of impotentia generandi two conditions are to be classified, the one being aspermia, the absence of discharge in the sexual act, the other being the more frequent and more important condition of azoospermia. I shall discuss here only the latter.

The condition of azoospermia is characterized by the discharge of a fluid in the sexual act which, though absolutely like the normal fluid in color, consistency, odor, and quantity, differs from it by the lack of the most essential factor, the spermatozoon. It is perhaps not superfluous to emphasize the fact that nothing but a microscopic examination of the fluid can enable us to make a differential diagnosis between the normal and the sterile semen.

We are sufficiently well informed as to the frequency of this condition of azoospermia as a consequence of various morbid conditions. After bilateral epididymitis the combined statistics of Gosselin, Godard, Liégeois, Terrillon, Bergh, Neisser, Noeggerath, Kehrer, Lier and Ascher, as collected by Finger,[1] show azoospermia in 207 out of 242 cases. Recent investigations of Benzler,[2] however, are more favorable. In his cases only 38.7 per cent were sterile, whereas the rest had offspring. Other diseases which are regarded as important in the etiology of azoospermia are diseases of the testicle, as chronic inflammation, tuberculosis, syphilis, tumors, congenital displacements, traumatisms; furthermore, chronic diseases, as alcoholism, obesity, diabetes, general tuberculosis, and to some extent and for a shorter or longer period of time acute febrile diseases.

The facts just mentioned are pretty generally accepted, but the local conditions in the sexual apparatus which are the direct causes of the azoospermia are still little known. The text-books contain very little information on this point, and what little they do contain but too frequently appears copied from generation to generation, and some of the statements are *prima facie* improbabilities.

Under these circumstances I thought it necessary to start a series of investigations of my own. Through the kindness of Prof. Ludvig Hektoen, of Rush Medical College, I have received for examination the sexual organs of one hundred males. I wish to avail myself of this occasion for a public expression of my best thanks to Professor Hektoen, without whose aid it would have been impossible to obtain the necessary material for such an investigation.

The organs were taken from a series of post-mortems without special selection of the cases, in order to reach an approximate idea of the frequency of azoospermia and its pathology in the general run of cases. Taking into account how unreliable the statements of most patients concerning former infections are, I have paid no attention whatever to their histories, and have relied exclusively on the pathological data, as they cannot lie. The post-mortems were all performed by Professor Hektoen or by his assistants, and the painstaking and thorough methods of these gentlemen have placed the pathologic diagnosis beyond doubt.

In the pathology of azoospermia two great classes are to be differentiated, one comprising the azoospermia due to lack of production of spermatozoa, the other comprising the azoospermia due to the obstruction of the system of sperm channels. I shall consider the latter of these two classes first.

Obstruction of the sperm channels has never been observed anatomically in the tubuli recti, in the rete Halleri, in the vasa efferentia and the coni vasculosi, but from here on in every portion of the sperm channels, the tail of the epididymis, the vas deferens, the ampulla, the seminal vesicle, the ejaculatory duct. An obstruction can be caused, as in every hollow organ, either by compression from without or by loss of epithelium and obliteration from within.

Since 1847, when Gosselin[3] gave his first report, the compression from without has usually been represented as the most important mechanical obstruction in the way of the seminal flow. But aside from Gosselin's own observations, which were made with the help of injections and which are open to serious objections, no proof has ever come forward in favor of this theory. And when we take into consideration the strength and rigidity of the muscular wall of the seminal channel in the tail of the epididymis, its natural coiled up condition, and especially the possible and probable sources of error in experiments with injection, it appears more and more likely that this theory, though hoary with age, is nevertheless untenable because anatomically unproven. Not until the compression from without produced by the well known thickening of the tail of the epididymis, the remnant of an acute epididymitis, has been proven anatomically to produce obstruction can we consider this theory well established.

It is, of course, an entirely different matter when we have to deal with a tubercular or gummatous destruction of an entire portion of the vas deferens together with its cavity. Here we have obstruction, but the obstruction is produced less by a compression from without than by the discontinuity of the epithelial tube.

The interruption of continuity of the epithelial channel of the vas deferens is a most potent and not at all infrequent factor in the production of azoospermia, as my own observations as well as those of Simmonds[4] have proven. These obliterations of the vas deferens are actually observed and are so readily demonstrated that it appears remarkable that they should not have been recognized long ago as the true cause of obstruction in the vas deferens, in the place of the compression from without which has been handed down from author to author and has been accepted without controversy.

The complete stages of this obliteration show a vas deferens

which is composed only of the external and middle muscular coats, while the mucosa, and frequently also the internal longitudinal muscular coat, are transformed into a mass of cicatricial connective tissue without a trace of epithelium. In two males in whom I found such complete obliteration, the findings in the other parts of the sexual apparatus warranted the diagnosis of tuberculosis in one and of syphilis in the other case. In two additional cases in which such occlusions were found, neither syphilis nor tuberculosis could be demonstrated. The stages preceding complete obliteration I have repeatedly had occasion to observe. In the more advanced stage the epithelial lining is defective, the cells being very small, more like endothelium, and not standing in two rows as they normally are. The lumen of the canal also shows changes, being transformed into a narrow and often twisted and distorted cleft. In other cases the epithelial lining is almost or entirely perfect, but the wall just outside the epithelial lining shows complete absence of the normal tissue of the mucosa, and instead of that a ring of hyaline tissue poor in nuclei and forming a rigid layer under the epithelial lining. We have to deal, then, with strictures of the vas deferens, or merely with changes in the wall apt to disturb the normal function.

In the portion of the vas deferens where it joins the seminal vesicle we find normally an enlargement of the size of the vas and of its lumen. This portion, the so-called ampulla of the vas deferens, may be completely occluded, as I have observed in two cases, so that a cross-section, instead of showing the numerous epithelial sinuses, shows nothing but a mass of fibrous cicatricial tissue in a ring of muscular bundles. Sometimes remnants of the normal glands are seen detached in the wall of the ampulla, slightly dilated, but without any communication with the vas deferens, and therefore never containing spermatozoa. In another number of cases the same hyaline zone which has been described in the vas deferens has been observed surrounding the epithelial lining of the ampulla.

Obliteration of the seminal vesicle in itself does not mean any direct obstruction to the flow of the semen from the testicle to the urethra, as the semen might pass on directly from the vas deferens into the ampulla, into the ejaculatory duct and the urethra. But from physiological experiments of Rehfisch[5] and others it is likely that obliteration as well as removal of the seminal vesicles interferes seriously with the normal function. I have observed total or partial obliteration of the seminal vesicle in three cases. In other cases I have found the hyaline degeneration of the wall of the seminal vesicles which corresponds to the same process in the vas deferens, and may be the anatomic explanation of cases of spermatorrhea, the

seminal vesicles losing by the hyaline degeneration their normal ability to expand with the increasing amount of their contents.

The next portion of the channel through which the semen has to pass is the ejaculatory duct, which is embedded in the tissue of the prostate. Finger[6] has claimed to have observed cases of obstruction by obliteration of this part of the channel by the formation of scar tissue following posterior urethritis with small abscesses of the prostate. But his descriptions must on closer examination appear very unsatisfactory and doubtful, though they are much repeated in his own writings and much quoted by other authors who have never themselves seen such obstructions. The objections which I have myself been compelled to raise against Finger's statements are the following:

1. In his macroscopic descriptions he mentions the presence of areas of cicatricial tissue on the colliculus seminalis by which the openings of the ejaculatory ducts have become occluded. In his microscopic descriptions, however, it is just the orifices of the ducts which are not obstructed, whereas the deeper parts show an apparent obliteration.

2. Finger does not say anywhere that he has examined the prostates, which form his material, on series of sections. It is true that sections may show the orifices of the ducts, also the more distant parts of the ducts and an apparent obliteration between the two. But unless the prostate gland has been cut in complete series of sections, it is absolutely impossible to state whether the duct really is obliterated or whether its course follows such a curve that parts of it which are contained in one section do not appear in other sections at all. I may mention here that I have examined every one of the prostates with ejaculatory ducts, which form my material, on complete series of sections—about three hundred sections to each of the ten prostates examined.

3. As proof of the obstruction to the seminal flow Finger mentions furthermore that in the cases which he believes to have found obliterated he has observed the ejaculatory ducts filled with spermatozoa. I have examined ten prostates, in none of which the orifices of the ejaculatory ducts were occluded, and in every case where the testicles produced spermatozoa the ejaculatory ducts contained them in larger or smaller numbers, so that this appears to be a normal condition of the dead prostate.

4. Finger's statement that he found the ducts dilated behind what he believed to be an obliteration is worthless, because this dilatation also is a normal condition due to some terminal or post-mortal processes which fill the ejaculatory ducts with spermatozoa.

The tissue surrounding the ejaculatory ducts has been found sclerosed, poor in nuclei, undergoing hyaline degeneration, by Finger,[6] myself, and others, but it is not probable that this alone is sufficient to give rise to an obstruction of the flow of semen. In my anatomical observations at least these hyaline ducts were filled with semen just as well as the normal ones.

It is possible that the ducts being embedded in the non-yielding, firm tissue of the prostate may be compressed from without by the formation of tumors of cystic or adenomatous or fibroid or mixed nature, or by abscesses of the prostate. I have observed both abscesses and tumors of the prostate, but none of them produced a sufficient compression of the ducts to give rise to obstruction.

The obstructions farther on in the male sexual tract, though important for the question of sterility in the male, do not come under consideration here as they do not produce azoospermia. The obliterations which are anatomically demonstrated to be productive of azoospermia are those of the vas deferens in its various portions down to the ampulla, and of the seminal vesicles.

As to the etiology of these obliterations and the stages preceding them, the structure of some of the most pronounced cases characterizes them sufficiently as tubercular. In other cases, however, their origin is less clear. But as the changes are of a chronic, not of an acute, nature, as they correspond to chronic changes produced by infections in other organs, there is little doubt that we have to attribute them to a similar causative factor. Taking into consideration the frequency of inflammatory affection of the vas deferens in gonorrhea and the absence of characteristics of any other infection in these cases, we are probably not far from the truth if we assume that these cases are due to gonorrheal infection. But it would be going too far to classify them all as gonorrheal cases, as other infections appear to be able to produce similar pathologic conditions. In the absence of bacteriologic investigation of these cases I do not wish to go further into this question.

Now an interesting question in physiology has to be raised. We know that usually, when the normally present excretory duct of a gland is obliterated, this gland undergoes speedy degeneration, and we know from experimental as well as pathologic data that this holds true in glandular organs generally. The testicle makes a most remarkable exception in this regard. It has been demonstrated experimentally that after artificial obliteration of the vas deferens, produced by cutting and ligating the duct, the testicle does not always undergo atrophy. My pathologic observations as well as those of other observers, especially Simmonds,[4] proved this to hold

good also in cases of pathologic obliterations of the vas deferens. With the exception of the case of syphilis, where the testicle was also destroyed by the disease, all of my cases of obliteration of any portion of the vas deferens presented normal function of the testicles with enormous quantities of spermatozoa in the portions of the seminal channel located between testicle and obliteration. Even macroscopically it could be observed that these portions of the vas deferens were dilated by a thick, whitish mass. If the physician keeps these observations in mind, he will find himself able to diagnose this condition of obstruction on the living subject, a point of the greatest importance with regard to a possible operative treatment and cure of these obliterations.

Ever since Gosselin's first publications the obstruction of the seminal channels has received the largest share of the attention of investigators, and the condition of the testicle itself has more or less been neglected. This may be due to the fact that the pathology of the testicle is so extremely difficult and complicated that what some authors consider normal senile changes, others ascribe to syphilis or smallpox, and others again to chronic general diseases or to local inflammatory disturbances.

So much, however, becomes evident, as soon as any number of testicles is examined, that deviations from the normal are extremely frequent. Another condition which makes the pathology of the testicle especially difficult in a consideration of the testicular origin of azoospermia is the fact that the seminiferous tubules show a great independence of each other, so that one tubule may present complete atrophy while neighboring tubules may be in the most florid and active condition. It is therefore necessary to examine many sections from many different parts of the organ before passiug judgment on the physiological abilities of the gland. This necessity implies a very large amount of work, so that so far I have been obliged to examine more than 15,000 sections.

Without going too much into the minute details of the pathology of the testicle, I may state that there are two great classes of suspended or destroyed spermatogenesis, that with and that without associated symptoms in the connective tissue surrounding the seminiferous tubules. At the present stage of our knowlege of human physiology we can speak only of arrested or suspended spermatogenesis as long as we find any normal spermatogonia. Not until these too have disappeared and the sustentacular cells are the only remnants of the epithelial lining of the seminiferous tubules have we any right to assume complete and definite destruction of spermatogenesis.

In the small series of cases in which I have found aspermatogenesis without changes of the surrounding connective tissue, this lack of normal action in the testicle is in all cases a partial one, so that some portions of the testicle show normal activity while other portions show considerable changes of the epithelial lining. The pathologic tubules then present either a single layer of epithelium composed of spermatogonia and sustentacular cells, or in cases further advanced even the spermatogonia have disappeared and nothing but sustentacular cells are left. While in the other tubules all developmental stages of the spermatozoa can be observed, these pathologic tubules present not a trace of spermatozoa or even spermatocysts or spermatoblasts. Similar observations have been made by Cordes,[7] but unfortunately his report becomes entirely inadequate just at this most important point, because he says nothing definite as to the changes in the surrounding connective tissue, which he mentions only casually. It is true that similar changes occur with and without changes in the surrounding connective tissue; still there are marked differences, and certain types of aspermatogenesis which occur frequently with changes of the connective tissue never are observed without these. Cordes has not separated the two in his report, and this mars the usefulness of his otherwise meritorious work for this particular part of the question.

The infiltration with fat which occurs in cases of suspended spermatogenesis without changes in the connective tissue, and which, as I may anticipate here, occurs also in cases associated with changes in the connective tissue, is frequent and often very marked. The observations of Cordes are very positive on this point and give clear evidence of the physiological occurrence of fat infiltration in the epithelium of the testicle. The amount, however, which is found in these cases can hardly be considered normal, as in many cases it amounts practically to a complete disappearance of the cell protoplasm of the testicular epithelium.

Neither age nor the disease to which the patient has succumbed appears to have any influence on the production of aspermatogenesis without changes in the surrounding connective tissue. This condition has been observed in individuals as young as 24 and as old as 53 years, these men having died from various acute or chronic diseases. It is therefore not clear what is the cause of this aspermatogenesis in these cases.

In the second and much larger class of cases we find as the one pathologic lesion common to all cases of this kind the changes in the surrounding connective tissue. The most marked of these is the for-

mation of a zone of hyaline tissue around the seminiferous tubules in the place of the normal flat connective tissue cells which form the physiologic sheath of the tubules. This zone of hyaline tissue cuts off the epithelium from its supply of nourishment, normally derived from the blood-vessels of the intertubular connective tissue. Its size varies from a scarcely noticeable thin line to a thick band, which by and by usurps the place of the entire seminiferous tubule.

Degenerative changes of the epithelium accompany the formation of the hyaline rings. In some specimens all of these changes occur simultaneously, in others only certain stages are present. Where the hyaline zone is thin we find the epithelium of the tubule either normal, even containing spermatozoa, or the spermatozoa are absent and we find only a few layers of epithelium, or even only one layer, the border-lines between the cells frequently becoming indistinct. There is, however, a distinct cavity of the tubule which is sometimes filled with spermatozoa. With the enlargement of the hyaline zone the epithelial masses are pushed toward the center of the tubule, which appears narrowed, the epithelium itself appears lower, the nuclei become indistinct and may disappear completely. With the further encroachment of the hyaline zone the epithelium is reduced to a very thin, flat layer resembling endothelium, and these tubules contain nothing but a few fragments of cells. The advancing hyaline zone becomes folded and wavy, resembling somewhat the hyaline zone of the corpus luteum of the ovary in its later stages. In the most pronounced cases the lumen of the tubule disappears completely, and instead of a channel lined with epithelium nothing is seen but a more or less wavy and hyaline mass of tissue with very few nuclei, without any trace of the normal testicular epithelium.

These degenerative changes may occur in small portions of a testicle which in other portions contains normally active tubules, but they may also occupy an entire testicle, so that not a trace of normal epithelium is to be found. I have tried to make sure whether a testicle which does not present any acute inflammatory changes can present complete destruction of its epithelium by the hyaline degeneration of the interstitial tissue. I have examined one testicle, for instance, on more than 500 sections without finding one single epithelial duct, and from many testicles 200 and 300 sections have been examined with a similar result. It becomes evident, therefore, that without any obstruction in the vas deferens azoospermia may occur by complete destruction of testicular epithelium and without discoverable syphilitic or tubercular disease. For just those

cases which presented the most complete atrophy of the testicular epithelium gave no anatomic evidence of the nature of the process which had worked such destruction. Frequently the rest of the sexual apparatus was found absolutely normal, the epithelium of the epididymis perfect, the vas deferens open—no acute inflammatory changes anywhere.

The only other changes which now and then were found associated with the epithelial destruction were of an endarteritic nature, but were not observed regularly by any means. It is important to notice that where this atrophy did not comprise the entire testicle, but only parts of it, it did not appear in disseminated patches, but followed the individual seminiferous tubule in its entire extent from the albuginea to the hilus of the testis. It is therefore not probable that this atrophy is due to smallpox, for while it is well known, since the work of Chiari,[8] that the orchitis of smallpox occurs in patches, it is also known that these patches are roundish, in the shape of small abscesses, rather than in the shape of stripes following the seminiferous tubules. It becomes also clear that these atrophic changes cannot be due to syphilitic vascular changes exclusively, because they so frequently are found to affect one or the other seminiferous tubule only, whereas interference with the vascular supply due to syphilis could not but afflict more than one tubule, a conclusion which is warranted by the normal anatomy of the testicular vascularization.

It is perhaps necessary to mention that the rete Halleri, the vasa efferentia, and the epididymis have been found absolutely normal in most of these cases; but the vas deferens or the seminal vesicles frequently showed hyaline degeneration of their walls associated with the hyaline zone present in the testicle. It is therefore more likely that the same process which led to this chronic affection of the vas deferens also affected some, or many, or all of the seminiferous tubules, reaching them not on the path of the circulating blood, but along the vas deferens—in other words, an infection which usually creeps along the mucous surfaces, very likely gonorrhea.

It is evident that the larger the reduction in size of the active seminiferous tubules, the greater the possibility of interruption of normal spermatogenesis, and the more probable a condition of diminished numbers of spermatozoa or oligospermia. Here also we find the anatomic basis of the clinical observation that when no spermatozoa can be found in the semen in the first specimen it is necessary to examine repeatedly in order to form a correct idea of the physiological abilities of the testicles.

The condition described here is most frequently bilateral, but may be more pronounced on one side than on the other. Both testicles may present complete atrophy due to this condition. Wherever this condition occurs, it can be recognized macroscopically, not necessarily by the size or consistency of the testicle, but by the whitish, homogeneous stripes on the cut surface of the organ.

Fuerbringer,[9] the father of the scientific interpretation of these conditions, has advanced our therapeutic ideals by introducing the plan of the surgical investigation of the testicle and its excretory ducts. He has advised in certain cases to lay bare and excise the epididymis in order to investigate its contents. In a case of an obliteration of the vas deferens surgical interference does not appear hopeless. Experimental anastomosis of divided ends of the vas deferens has been practiced successfully on the dog by Van Hook.[10] It has been practiced on the human being after the unintentional division of the vas deferens in hernia operations, but the success in these cases is of course much harder to prove.

If no dilatation of the vas deferens or the epididymis indicative of an obliteration is found, it would be correct to split the testicle and examine its cut surface; also to examine some testicular juice squeezed out from the cut surface. The uncertainty, which is the worst torture of patients afflicted with these troubles, can thereby be settled one way or the other in the most reliable manner possible. Suture of the split testicle is neither difficult nor dangerous.

Cases of azoospermia due to obstructions in some part of the vas deferens are much more hopeful and much more amenable to our treatment than azoospermia of testicular origin. This much the crude outlines of the results of my investigations presented here are, I hope, well able to demonstrate. And if we can help only a few of the unfortunates afflicted with this kind of sterility, we shall have made another advance in the scientific treatment of a hitherto much neglected and little understood pathologic condition.

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100 STATE STREET.

A CASE OF UNUSUAL CEREBELLAR TUMOR, WITH HYDROPS VENTRICULI.

BY LEWIS RUTHERFURD MORRIS, M.D.,
Member of the New York Academy of Medicine.

F. W——, aged six years. The father is 56, an alcoholic, with no history of syphilis, but of a gouty diathesis. Mother, aged 35, is a neurasthenic, decidedly gouty. No syphilitic family history. With her first child there was albumin in urine during last month of pregnancy. She was threatened with eclampsia, but this was averted. Labor was at full term, prolonged, but forceps not used. The child was poorly nourished, but otherwise healthy. Owing to scanty milk supply, child was brought up on sterilized milk modified with fresh beef juice and orange juice. Fontanels slow in closing. Had attack of indigestion with fever when 14 months old, which was diagnosed as enterocolitis. Had several similar attacks afterwards.

The child was always neurasthenic, but bright and precocious, and grew rapidly, but was always thin. In March, 1897, she had a bad fall and struck the back of her head over occipital region. No loss of consciousness. No vomiting, no subsequent headaches, but a large hematoma just below occipital protuberance. A month later she fell and struck the side of her head on sidewalk, and was somewhat dazed for a few minutes. Although she learned to walk early she seemed to be unsteady, and stumbled and collided with the furniture more than children usually do, though at the age of five she learned to dance and was light and graceful on feet. In March, 1897, she had an attack of fever with pain in abdomen, and a diagnosis of probable appendicitis was made, and an opinion was expressed that the former gastrointestinal attacks were probably from the same cause. In this Dr. McBurney agreed. As the case was mild and resolved spontaneously no operation was performed. In June, 1897, she had a severe attack with chills. An operation was performed by Dr. Charles McBurney, assisted by myself. After complete etherization a large mass could be easily made out on the right side over the region of appendix, which it was impossible to feel, owing to nervousness of child, prior to etherization; and a thoroughly diseased appendix was found, ulcerated in several places, and a small abscess about the base surrounded by old adhesions, with very little evidence of fresh inflammation. The appendix was removed and abscess cavity packed.

The child made a good recovery, and for a year was better than ever before and gained in weight. In the spring of 1898 she had occasional headaches in the morning, but she did not complain of dizziness, nor was there any stumbling or staggering gait noticed.

Health during the preceding winter was unusually good. No colds nor return of digestive derangement. In May the mother noticed a "curious tired look of the eyes," which, however, disappeared at once. An aunt during preceding December had fancied that there was a "cast" in one eye. In May and June the child had days when she showed the same tired look about the eyes, and in July seemed listless and to be losing weight, and she "twisted one shoulder" and the head "seemed to be pushed forward and fixed," though with no pain in the back of the neck, and "she could move head easily." She had slight morning headaches, and nausea with vomiting of mucus, but no explosive vomiting. In the afternoon, being at Bar Harbor, she played in the sand out-of-doors and seemed bright. In August she had two very severe headaches with morning nausea and vomiting with each, lasting two or three days, at which time she preferred to lie in bed, and had marked photophobia, but no disturbance of vision or of ocular muscles was noticed. In the latter part of August she began to improve and gained in weight until the middle of September, when she again had return of headaches in morning with vomiting, and the doctors called in noticed a marked internal strabismus of the right eye with nystagmus, and an inequality of the pupils, that of the right eye being dilated. Nurse thinks she had noticed the last symptom once or twice during the summer, but had not mentioned it, as it seemed to disappear at once, but never observed previously any crossing of the eyes. She returned on September 27 to New York, where I saw her.

Child anemic in appearance and emaciated, tongue coated, bowels inclined to constipation, slight diarrhea during the previous week, pupils equal and no apparent weakness of ocular muscles. Pupils responded equally though somewhat sluggishly to light. Tendon reflexes slightly exaggerated. No tenderness in abdomen; examination of heart and lungs and spleen showed them to be normal. Liver was slightly enlarged. No tenderness over scar of operation, on deep pressure. Mother says that pupils were dilated unequally, and the eyes were "crossed" when seen by Dr. Rotch in Boston on her way to New York. Temperature not above 99° F. Pulse and respiration were observed for a week and found to be

normal. The hands were tremulous; could stand with eyes closed fairly steady, but with some tendency to fall forward. Walked with eyes shut; no staggering, but rigidity, and as if about to pitch forward. Head not rigid except when walking or sitting. She could not bend forward from hips and pick up objects from floor; but with left shoulder slightly raised and neck muscles rigid, and feet well apart, by flexing thighs well, with head thrown back, with right hand she was able to pick up objects from floor. In doing this she complained of no pain; she could not do this with the left hand. This inability to bend forward from hips had not been constant during the summer, as child had played in the sand on the beach. During the next two weeks the child, being sent to the country, improved under careful diet and gained in weight a few pounds, showing no cerebral symptoms. At this time the right pupil became dilated, and responded but sluggishly to light; there was paresis of external rectus of right eye. She then had a number of cramps in right leg, and a number of clonic convulsions in the right leg, a "kicking motion" lasting about a minute each time. Afterward appeared a condition of apathy with one or two nights of restlessness, with shooting pains in head seeming to radiate from occipital region, but lasting only a few seconds; the rest of the night she was excited, singing most of the time. In the daytime she was rather apathetic. This condition of apathy increased until patient lay in stupor most of the time, occasionally giving a cry, but arousing for meals, and having good appetite. Bowels were moved only by enemata. The urine was voided involuntarily, at times, at first; afterwards constantly. Finally she could not speak nor could she be aroused. This was followed by trembling of hands and feet. The hands were flexed and the thumbs turned in, especially the left. The feet were extended and the toes turned inward.

November 20 she had the only marked general convulsions, characterized by clonic movements of the feet and legs and hands and arms, which lasted about half an hour. No marked local movement of extremities, nor was one side affected more than the other. Both eyes during convulsions turned inward and downward. The symptoms of pressure and nerve irritation became more pronounced after this convulsion. Loss of deglutition. Involuntary urination, and marked constipation.

Cheyne-Stokes respiration at times, contracture of feet and twitching and trembling of hands all more pronounced, and on December 13 she died from respiratory failure, having been nourished from November 20 by enemata only.

REPORT OF DR. A. M'LEAN HAMILTON.

At the request of Dr. L. R. Morris I first saw the patient on November 4, 1893. I then obtained the history up to that time. The child had a dull, apathetic expression, and when aroused feebly followed the movements of my finger with her eyes. She did not respond, however, to extreme irritation, nor did she speak or respond to attempts to arouse her. I found considerable muscular rigidity, which at a late visit was manifested in extreme extension of both extremities. There was an increase of the reflexes, especially the patellar. The left sixth nerve was paralyzed, giving the characteristic ocular deformity, and the right pupil was larger than the left; both reacted readily to light, but were dilated more than they should be in spite of the inequality. She presented irritative pressure symptoms. Her condition in connection with the early disorderly movements of equilibrium, vomiting, headache, and involvement of the third nerve, led me to make a diagnosis of hydrops ventriculi and a median cerebellar tumor, probably of a gliomatous nature. I saw the child upon several occasions afterward, and was at the post-mortem. The subsequent symptoms and appearance revealed at the autopsy fully verified my diagnosis except in regard to the form of the growth. Its appearance was nodulated; it existed without any apparent cyst or limiting tissue, was hard, and stood out from the surface of the cerebellum. It may be said that the diagnosis of tubercular meningitis had been thought probable by several physicians who had seen the child before. The absence of characteristic temperature variations, delirium, or paralysis, and the duration of the disease, and finally the absence of tubercle, showed that such a diagnosis would have been erroneous.

REPORT OF DR. JOHN R. WEEKS.

The patient was first seen by me on October 31 at the request of my friend, Dr. Morris. About three months earlier the mother of the patient had noticed that the eyes "looked tired," and an aunt thought she recognized slight cast in eyes.

Status præsens: Apparent slight loss of power of external; periodic, but not constant, strabismus of either eye. On moving the eyes outward the excursion is almost normal in extent, but the eye cannot be held at maximum abduction. The pupils are of moderate size, the right being slightly larger than the left. The irides react readily to light, and on attempts to use the ophthalmoscope the pupils become so small that a mydriatic is necessary. The patient can readily recognize those who come into the room.

Can count fingers readily at twelve feet, and apparently has fair vision. A more accurate determination of the vision could not well be made.

Ophthalmoscopic examination of the fundus disclosed papillitis in both eyes, the elevation being about ⅔ millimeters. There was some serous exudation to the temporal side and below the disk in the right eye. The retinal arteries were smaller than normal in both eyes; the veins engorged and tortuous. The attendant stated that the strabismus varied greatly in degree, and that the size of the pupils varied greatly in the same illumination. From the symptoms with which Dr. Morris kindly acquainted me — namely, morning vomiting, stumbling gait, with tendency to fall forward, severe cephalalgia at times, absence of pronounced general spasms in connection with those of the eyes, character of pulse and temperature — I concluded that the case was one of cerebellar tumor, locating the mass at the anterior border of the cerebellum. The variation in the eye symptoms, referable to the pupil and to the extrinsic eye muscles, was thought to be due to a variation in the pressure exerted on the muscles of the third nerve.

November 6 I again saw the patient in connection with Dr. Morris and Dr. Hamilton. The pupils were uniformly large, irides reacted to light, but not so readily as before, and did not become so small but that the interior could be readily examined without a mydriatic. The interior of the eyes remained the same, except that the serous exudation previously observed in the right eye had disappeared. There was marked paresis of the right externus and slight paresis of the left externus. November 21 the eyes were fixed, pupils large, irides did not respond to light. Almost complete ophthalmoplegia externi and interni; interior unchanged. The condition of the eyes remained unchanged up to the death of the child, which occurred on December 13, 1898.

Through the kindness of Dr. Morris I removed the posterior half of the globe of the right eye and the optic nerve. When the optic nerve sheath was exposed, by removal of the plate of bone forming the orbital roof, it was found to be greatly distended immediately back of the globe for a distance of about two centimeters. It is probable that this distention extended along the entire nerve during life, but that after death the fluid flowed out of the proximal end of the optic nerve sheath into the cranial cavity, because of the position of the body after death.

The microscopic examination showed marked edema of the tissues of the optic disk. There were but very few small cells in the

FIG. 1.—Brain looking forward, both ventricles laid open, cerebellum central and inferior tumor exposed in right ventricle

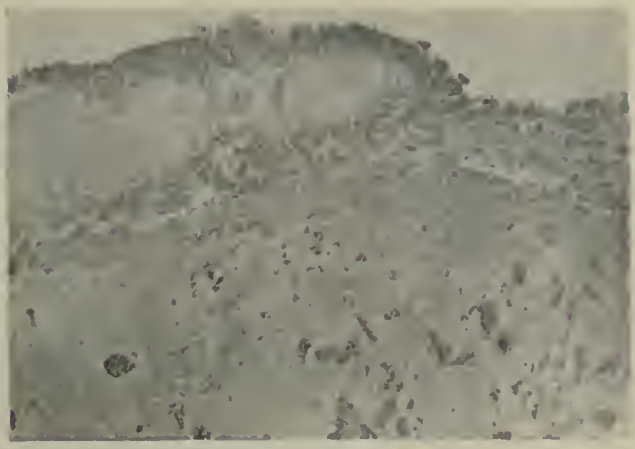

FIG. 2.—Section of tumor.

FIG 3.—Section of optic nerve showing distention of optic nerve sheath. x 20.

FIG 4.—Section showing papillitis.

tissue of the nerve and disk, and no evidence of inflammatory infiltration.

NOTES ON THE BRAIN TAKEN AT THE AUTOPSY, BY DR. EDWIN S. STEESE.

The cerebrum on removal seemed to be of the usual color and consistency. The convolutions were flattened. The pia was rather drier and more injected than usual. The cerebellum was apparently normal, although slightly discolored about the ala lobuli centralis. No tumor was visible until after a longitudinal incision through the corpus callosum and a separation of the hemispheres. Then there was exposed a brownish-red tumor, about the size of an egg, lying in the median line and touching the cerebellum. The lateral ventricles were opened and were full of a thin reddish fluid; their surfaces were stained yellow. Projecting into the right ventricle from the foramen of Monro was a cyst, formed by the velum and filled with a bloody fluid. No further exploratory incisions were made at that time. There was about six ounces of fluid in the cranial cavity.

After some days of hardening in a solution of formalin, the specimen was received at the laboratory of the Presbyterian Hospital, and a more exact knowledge of the location of the mass was obtained.

PRELIMINARY PATHOLOGICAL REPORT, BY DRS. TUTTLE AND STEESE.

The mass, about 4½ centimeters in length, 4 centimeters in width, and 4 centimeters in depth, was situated in the cavity of the third ventricle and reached forward and downward into the optic recess and infundibulum. Separating the thalami, it displaced upward the roof of the third ventricle and obliterated the posterior pillars of the fornix; it here lay in contact with the corpus callosum. Extending backward and downward it destroyed the pineal gland, overrode the lamina quadrigemina, compressing under it the aqueduct of Sylvius, separated the corpora quadrigemina, and reached to the tip of the valve of Vieussens. The fourth ventricle was intact and the aqueduct still patulous, but very small. The amount of fluid in the cranial cavity was about six ounces, and was reddish in color.

On section of the tumor a dark-red surface presents, looking, for the most part, like clotted blood. A considerable area near the superior surface, however, is somewhat lighter in color and of a spongy texture. Areas of like appearance, but more injected with

blood, are seen in several places over the cut surface. From the appearance of the surface it is probable that several hemorrhages have occurred at different times, splitting up the new growth and forming clots, which vary in color according to age.

MICROSCOPICAL EXAMINATION.

The portions of the tumor which appear spongy to the naked eye evidently consist of a new growth considerably broken up by hemorrhages, while the darker and more solid portions are largely made up of blood-clot, enclosing isolated clusters of cells like those in the spongy areas. The new growth consists of small round cells arranged in irregular spaces formed by trabeculæ of delicate connective tissue. Near the capsule the growth is continuous and of uniform structure, but toward the center of the tumor the cells are more and more split up by areas of blood cells, until the appearance is that of a section of recent blood-clot containing small islands of tissue like that near the surface. The structure of the tumor is that of a small, round-celled sarcoma, augmented by repeated hemorrhages.

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ASYNCHRONISM IN MITRAL STENOSIS.

BY C. C. GIBBES, M.D., M.R.C.P. Lond.,
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Mitral stenosis has provoked more discussion than any other form of valvular heart disease, yet in spite of it all the mechanism of the disease is, to say the least, rather involved; each theory brought forward as to the cause of the presystolic murmur being founded on a totally different conception of the heart's action in this disease.

Some authorities still support the theory enunciated by Ormerod and Barclay, that the murmur characteristic of this disease is not presystolic but systolic in rhythm, and caused by the systole of the left ventricle. The majority, however, have accepted the "Gairdner" theory, viz., that the murmur is postdiastolic and produced by the flow of blood from the left auricle into the left ventricle. Dr. Brockbank has brought forward a modification of the former theory, but has adhered to the principle that the murmur is systolic. There have been therefore practically only two theories before the profession; these we style for short the "Barclay" and the "Gairdner."

The theory I have ventured to bring forward elsewhere agrees in the main with the Gairdner mechanism, my opinion being that the presystolic murmur is composed of three parts:

1. Audible right ventricular muscle vibrations. In consequence of the two ventricles not acting synchronously a portion of the right ventricular systole takes place, and its muscle vibrations are heard while the left ventricle is in diastole.

2. A murmur caused by the flow of blood from the left auricle into the left ventricle, and called by Professor Gairdner the auriculo-systolic murmur.

3. The slapping first sound. This forms part and parcel of the murmur and ought to be so considered.

The discussion that was carried on in *The Lancet* during the years 1872, 1887, and 1889 satisfied the majority of the profession that the Barclay theory was untenable; but while disproving that theory Professor Gairdner's supporters failed to answer several pertinent questions asked by their opponents, nor have they been satisfactorily answered by subsequent writers on this subject. The majority of the arguments brought forward in favor of the Gairdner theory have been founded on tracings of the cardiograph, although Roy and Adami have proved that such tracings cannot be relied on. To show the feebleness of these arguments it will be sufficient to

quote briefly from a recent article on mitral stenosis (Allbutt's System of Medicine, vol. v). Referring to cardiograms obtained by placing the tambour over the apex beat, the writer tells us on page 1015 that "the pen of the cardiograph is guided by the apex of the left ventricle; the record of the auricular systole is written by an impulse communicated from the auricle to the ventricle." He therefore appears to have overlooked the fact that the apex of the heart, in pure mitral stenosis, is formed by the right ventricle alone, and in that disease the left ventricle is not in contact with the chest wall at all. In fact, the evidence is manufactured regardless of morbid anatomy, no distinction being drawn between tracings taken in pure mitral stenosis and in double mitral disease.

The special utility in these tracings consists in their being able to prove anything you wish, the same ones having been used to prove and disprove both the Barclay and the Gairdner theories; and I might with equal justice use them in support of my own theory, to prove that the tambour placed over the apex beat receives vibrations from the right ventricle, and consequently the tracings show that the right ventricle contracts before the left. It is unnecessary to enlarge on this subject, as the above facts are, I think, sufficient to demonstrate the true value of cardiographic evidence.

The object of my present paper is to discuss briefly the mechanism of mitral stenosis and to show that the special characters of the presystolic murmur are due to reduplication of the first sound, in consequence of the two sides of the heart not acting synchronously.

We have in pure mitral stenosis a slowly progressing *constriction* of the mitral orifice, which renders the process of filling the left ventricle more and more difficult as the disease progresses. This slowness of onset enables the heart to gradually adapt itself to these altering conditions, and we find that the difficulties are met by the auriculo-systolic blood current becoming accelerated and the diastole of the left ventricle occupying a larger portion of the cardiac cycle than in the normal heart. In the early stages hypertrophy of the left auricle and an increase in the suction power of the left ventricle are able to effect this increased velocity, but as the disease advances they prove insufficient, and the right ventricle and pulmonary arteries become hypertrophied and gradually take on the work, the left auricle being often incapable of any contraction. The right ventricle thus aids or assumes the functions of the left auricle. Now to do this, and at the same time to have a purely ventricular rhythm, would be an impossibility; consequently, to meet the requirements of the circulation the systole of the right ventricle is prolonged, the

early portion of it being auricular in rhythm and occurring while the left ventricle is in diastole. In other words, the two sides of the heart do not act synchronously, and I contend that the circulation could not be carried on in this disease if they did. This is borne out as follows:

1. The conditions of interventricular tension on the right and left sides of the heart. We know that we have low tension in the left ventricle and high tension in the right. We know that while the right ventricle is engorged and has a difficulty in getting rid of its contents, the left suffers from a process of starvation, and nature's efforts are greatly taxed to supply it with sufficient blood to carry on the circulation. Consequently the left ventricle has a prolonged diastole in order that it may become sufficiently full to meet the requirements of the circulation, and being insufficiently filled the systole is short and sudden. On the other hand, the right ventricle has an entirely different condition of affairs to deal with; it is always too full, the diastole is curtailed, and the systole is prolonged, the latter commencing while the left ventricle is still in diastole. Thus the right ventricle assumes not only the functions but also the rhythm of the left auricle.

2. Reduplication of the second sound. This is almost invariably present as long as the heart is properly compensated, its presence depending on both the aortic and pulmonary second sounds being audible. According to some authorities the reduplication is frequently absent at the base and yet present at the apex; this, however, is not my experience. We cannot expect to hear the same interval between the reduplicated sounds when we listen over the site of the valves, where the sound waves originate, as we do at the apex, where the waves have had a greater amplitude; consequently, while at the apex we hear a distinct interval, at the base the aortic and pulmonary second sounds can be heard side by side without any interval; they, in fact, are often mistaken for one sound, but careful stethoscopy will reveal the want of perfect synchronism. Cases do occur, however, where the reduplication is *really* absent at the base and present at the apex, but I believe they are very rare. In propounding theories to account for this, it appears to have been forgotten that in health the second aortic sound is always heard louder to the left of the apex beat than over the site of the valves, and that in mitral stenosis, while both the base and the apex are pushed further back from the surface of the chest, by the engorged left auricle and right heart, the former causes the base to be displaced to a greater extent than the apex.

We have therefore two reasons why the second aortic sound should be lost at the site of the valves before it is at the apex.

3. Reduplication of the first sound.

The presystolic murmur may be said to be fairly characteristic of mitral stenosis, although it is by no means pathognomonic, but it must be remembered that it is not a mere murmur that we have to deal with, but a rhythm of which the murmur forms only a part.

In typical cases we hear on auscultating the apex:

1. A slapping first sound, and provided the aortic second sound is audible, a reduplicated second sound.

2. A shortened systole and a prolonged diastole.

3. A harsh postdiastolic murmur, crescendo in character, and ending abruptly with the first sound, of which it forms an integral part. The murmur varies in length and may extend backwards to the second sound; as the disease advances it frequently varies, but these variations follow certain well marked lines, and assist us in forming a prognosis and prescribing treatment. The *Lancet* discussions on the origin of the presystolic murmur originated in a case of mitral stenosis with bradycardia that came under Dr. Barclay's care, and concerning which he wrote as follows: "The contraction of the heart could be felt beween the ribs during the pause, prior to the first sound and while the presystolic murmur was audible to the ear" (*Lancet*, Feb. 3, 1872, p. 284). I have recently reported a similar case (*Clinical Journal*, Dec. 7, 1899), in which I found that by laying my finger along the fifth left intercostal space I was able to feel the ventricular systolic wave run along my finger and end with the apex beat.

The character of the movement has evidently been quite misunderstood; it is not a "lifting" movement as suggested by Dr. Dickinson (*Lancet*, Oct. 19, 1889, p. 782), and cannot be satisfactorily explained by the hypertrophied left auricle causing "the propulsion of the heart's apex against the wall of the chest" (Sansom, Allbutt's System of Medicine, vol. v, p. 1015). Moreover, it did not in the least resemble the undulations of a dilated heart or the diffuse impulse of dilatation with hypertrophy. On combining auscultation with palpation, I found that it occupied more than half the entire diastolic period. I have also had other cases in which this systolic wave has been less marked, and can quite understand the persistency with which the supporters of the Barclay theory have adhered to their views. I have not the slightest doubt that I have felt the heart contract, in a case of mitral stenosis, during the greater part of the pause and prior to the occur-

rence of the first sound; or, to correct my statement, that I have felt the *right* ventricle contract. I have, however, no evidence to prove that the left ventricle was also in systole. On the contrary, the fact that the wave-like contractile movement commenced shortly after the reduplicated second sound negatives the idea. Dr. Barclay, presupposing that the two sides of the heart were acting in synchronism, concluded that the so-called presystolic murmur was systolic in rhythm. In order to fully appreciate the auscultatory signs resulting from this reduplication of the first sound, we must clearly bear in mind the causes producing that sound. Sherrington informs us (Allbutt, vol. v, p. 467) that it is "found to be due to the vibrations of (*a*) the muscular wall of the ventricles, (*b*) the auriculo-ventricular valves, and (*c*) the mass of blood in the ventricles." Therefore the first sound may be reduplicated in two ways.

1. The two ventricles may not contract synchronously, and that portion of the first sound due to muscle vibrations may be heard during one of the pauses. It partakes of the nature of a burr, and varies in length and intensity in proportion to the amount of asynchronism and the vigor of the heart's action.

2. When the tricuspid and mitral valves are not in tension together the sound resulting from that tension becomes split up into its two component parts, and the text-book reduplication of the first sound is heard. In mitral stenosis the distended condition of the right heart nullifies the sudden tension of the tricuspid valves and prevents its being heard; there is no doubt, however, that any tension in the valves must be antedated and in many cases be synchronous with the previous second sound. The possibility of the reduplication of the second sound being in some cases due to this naturally crosses one's mind, but I do not think it can be entertained. Both these forms of reduplicated first sound may occur in the same patient, the muscle sound and the two valvular sounds being heard alternately for a few beats each. This is by no means common, but I have two cases under treatment in which it is present.

3. In discussing reduplication of the muscle vibratory portion of the first sound, we must bear in mind the nature of the cardiac systole. It is generally accepted that the wave of muscular contraction begins at the base, spreads to the apex, and then returns to the base (Waller's Physiology, pp. 395 and 396), and I believe that "the heart contraction during the pause" described by Barclay is the base-to-apex portion of the right ventricular systole, the first sound occur-

ring when that wave arrives at the apex; the base-to-apex portion being synchronous with the shortened left ventricular systole. On auscultation we hear these muscle vibrations during the diastole of the left ventricle, and they are the cause of the peculiar crescendo character of the so-called presystolic murmur and the intimate blending of the auriculo-systolic portion of it with the first sound. In the later stages of the disease, when there is some failure of compensation, the so-called presystolic murmur is said to be lost; in the majority of these cases, however, the audible muscle vibrations can still be heard, the lost portion being that contributed by the auriculo-ventricular blood current. In many cases this can be restored by rest in bed for a few days, and the characteristic murmur is then again heard. When there is a greater breakdown of compensation we only hear a slapping first sound extending backward into the diastole, the auriculo-systolic and the greater portion of the muscle vibrations being lost.

4. These muscle vibrations also prevent the distinction between the two murmurs of double mitral disease that are heard in the double aortic murmur.

Some authorities are content to deny the occurrence of cases in which it is impossible to tell where the presystolic murmur ends and the systolic begins, and refer to a "soundless" interval, etc.; but these cases do occur, have been shown by me, and require explanation. I maintain that the perfect blending of two murmurs caused by currents traveling in different directions can only result from the introduction of a third element, such as the reduplication of the muscle vibratory portion of the first sound.

5. Whatever view is held regarding the cause of the presystolic murmur, all I think will be agreed that the murmur and the thrill have a common origin. On combining palpation and auscultation this becomes self-evident, the thrill in many cases being felt continuously throughout almost the whole of the diastole and terminating abruptly in the first sound; on the other hand, the thrill in aortic stenosis has a very different character, and makes it difficult to understand how they can both have a common origin, viz., the blood current.

6. Apart from mitral stenosis this form of reduplicated first sound is heard under many other conditions. In children the synchronous action of the two sides of the heart is easily disturbed and a pseudopresystolic murmur heard; this is especially the case if the pericardium is adherent and the contraction of the right ventricle much hampered. We also occasionally have it in mitral regurgita-

tion. The patient when first seen has failure of compensation, the heart's action is much quickened, and pseudopresystolic murmur present; as the heart gains in strength and quiets down, the presystolic element passes off and a pure mitral systolic murmur is heard. This is my own experience, and I presume that of many others.

On the other hand the case may not respond to treatment, but terminate fatally; and if, as occurred recently in the practice of one of our best known men, the diagnosis of mitral stenosis has been made, we are surprised to find at the post-mortem neither contraction nor roughening of the mitral orifice. It is also very common in anemia and imparts a presystolic character to the heart sounds. Other instances might be mentioned, but the above will, I think, show that want of synchronism is by no means so rare as is generally supposed.

In conclusion, I would urge that proper recognition of this result of asynchronism is of the greatest importance in all forms of valvular disease, but essential for the correct diagnosis of mitral stenosis.

GUNSHOT WOUNDS OF THE BLADDER.[1]

BY CARL H. ANDERSEN, M.D.,
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The uniform fatality of the intraperitoneal gunshot wounds of the bladder recorded in the table brings into strong relief the results of a case coming under my observation, which was treated with the normal salt solution, in addition to the usual medical and surgical procedures. The patient was not seen or treated until six hours after the injury had been received; hence the unfavorable conditions were essentially those which would occur after being wounded in battle or in a street row.

July 21, 1898, a soldier was brought to the hospital with the following history: In a barroom row, while sitting on the floor, his body somewhat inclined to the left, he was shot by a policeman. The bullet (38 caliber) entered the right buttock behind the femur, lodging in the bladder. The patient, when seen about six hours later, was in profound shock. His temperature was 97.2°, pulse 120 and weak. There had been no external hemorrhage. His breathing was very superficial and face and extremities cold and clammy. He had been without treatment until I saw him. He was then put in bed, hot-water bottles placed around him, a quart of normal salt solution injected in the colon at a temperature of 128°, and $\frac{1}{20}$ grain of strychnine injected hypodermically. An hour later he was still in an unconscious condition, exhibiting many nervous symptoms. By another injection into the colon of a quart of salt solution at a temperature of 135° he was stimulated markedly, and he replied intelligently to questions. Skin lost its clammy, cold feeling, respirations became less shallow, pulse stronger and slower, and his temperature rose to a little above normal.

Four hours after entering the hospital his temperature was 98.8°, pulse 90. He seemed to have recovered almost entirely from shock. He complained of no pain, except on urination. A catheter was introduced into the bladder and ten ounces of bloody urine removed. Twenty hours after being shot his temperature was 102.4°, pulse 122, abdomen tympanitic, and he complained of severe pain in the region of the bladder. I then decided to examine the bladder instrumentally. The diagnosis I had made was gunshot wound of the bladder. The patient was placed on the operating table, and a Thompson sound introduced, which caused so much pain that it was decided to anesthetize him before doing any further searching. The

[1] Inaugural thesis, Chicago Academy of Medicine.

Thompson sound was then reintroduced and the bullet at once located in the posterior wall of the bladder, where it lodged. Owing to the cardiac condition it was thought best not to operate until the next morning. His temperature on leaving the operating table was 102.6°, pulse 130. He was put into bed, and strychnine, $\frac{1}{20}$ grain hypodermically, ordered every three hours. The bladder was to be washed out with boracic acid solution every three hours. A soft-rubber catheter was left in the bladder. A 9.30 the next evening his temperature was 104.4°; pulse rapid and weak. He had marked tympanites and complained of a great deal of pain over the bladder, the knees being drawn up.

Owing to lanterns being the only available lights, it was decided to wait until morning before operating. One-fourth grain of morphine was then given, and repeated once during the night. He passed a fairly comfortable night. Temperature in the morning 104°, and pulse 132. He was again placed on the operating table and anesthetized with ether. A suprapubic cystotomy was performed by myself, in the usual manner. The bullet was loose in the bottom of the bladder, instead of in the posterior wall, where it had been located. The bullet hole was found in the posterior wall of the bladder, but it was left alone, as it could be sutured with difficulty. A rubber drainage-tube was inserted in the bladder through the urethra, and the abdominal wound closed in the usual manner, the bladder itself not being sutured. I desired to open the abdominal cavity and wash it out, but the majority of the consultants decided that the patient was not in a condition to admit of any further operative procedures. When he left the operating-room his temperature was 103.2°, and pulse 140 and weak. A quart of salt solution was injected into the colon, and one-tenth grain of strychnine given hypodermically. The rectal injections were repeated every two hours. At 3 P.M. the same day his temperature was 104.8°; his pulse at the wrist could not be counted, and his breathing was very superficial.

I decided to open up the abdominal cavity at once. An incision was made in the median line, extending from an inch below the ensiform cartilage to the suprapubic incision made in the morning. A large quantity of grayish, foul-smelling fluid flowed out as soon as the cavity was opened. There were no means at hand for bacteriologic examination of the fluid; consequently none of it was saved, but there was no doubt of its septic character. The abdominal cavity was washed out with normal salt solution at a temperature of from 114° to 116°, and continued until the fluid returned as clear as when

poured in. Fully thirty-five gallons was used. The abdomen was then closed, except at the lower angle, where, in the absence of a suitable drainage-tube, a sterilized rectal tube was inserted to the bottom of the cavity behind the bladder. A funnel was fastened in the outer end of this tube and the abdominal cavity filled again with salt solution, at a temperature of 115° F.; and it was my intention to wash out the abdominal cavity every two hours, if the patient did not improve.

Temperature on leaving the table was 105.8° per rectum; pulse very good. One-tenth grain of strychnine was given hypodermically. A quart measure of coffee and four ounces of whiskey was thrown into the colon. One-twentieth grain of strychnine was ordered every two hours until the physiologic effect was obtained. Hot salt solutions were given per rectum every two hours. At 8 P.M. the patient was conscious, all nervous symptoms had subsided, the rectal temperature was 103.5°, and pulse 140 and good. At 11 P.M. the temperature was 101.4° and pulse 140. He slept all night. At 7 A.M. the temperature by mouth was 100° and the pulse 114. The tube in the peritoneal cavity was removed, a stitch which had been left untied was tied, and improvement after this was uninterrupted. On the fifth day the temperature was normal; on the ninth day the tube from the bladder was removed; and on the twenty-ninth day the patient left the hospital well.

The literature of gunshot wounds of the bladder is scanty considering the probable frequency of such wounds during wars and brawls. Bartels (*Archiv Klin. Chir.*, vol. xxii, pp. 519–715, 1878) has collected 285 cases; of these 27 were intraperitoneal, all of which died. The other 258 cases were extraperitoneal, of which 39 died. Injury to rectum, 60; injury to bones, 131. Of the fatal intraperitoneal cases, all of them were before the antiseptic era; of the fatal extraperitoneal cases, 33 were prior to the antiseptic era. In addition to these cases reported by Bartels I have collected 31 cases, of which 19 were prior to 1878, and 12 since 1878 to the present date. Of these, 7 were intraperitoneal with five deaths, and two recoveries including my own case. Of the 24 extraperitoneal cases, 2 died; injury to the rectum, 3; injury to the bones, 5; permanent fistula, 2. Of the 31 cases collected by me, 14 were since the antiseptic era; of these 4 were intraperitoneal; 2 lived and 2 died. The 10 extraperitoneal cases all lived.

From the history of this case and a careful study of the reports of the above 315 cases, I am constrained to draw the following conclusions:

I. *Intraperitoneal Wounds.*—(*a*) The mortality in the intraperi-

toneal bullet wonnds of the bladder is very high and due almost exclusively to peritonitis.

(*b*) It appears that shock or hemorrhage did not materially contribute to the death-rate, or it would have been mentioned; possibly it was overlooked.

(*c*) Before the antiseptic era all of the thirty cases dying, and since that time only two living out of four, and these the only ones treated by laparotomy, points clearly to what should be done.

II. *Extraperitoneal Wounds.*—(*a*) The mortality of extraperitoneal vesical injuries by bullet is only 13.4 per cent, and peritonitis is not mentioned in this connection.

(*b*) Extravasation of urine was the main cause of death. A few died from hemorrhage, and several from prolonged suppuration.

(*c*) Permanent fistula was a frequent sequela, especially when the rectum was involved. No operation has been done for the recto-vesical fistula.

(*d*) It should be pointed out that since 1873 ten cases were reported as treated antiseptically, and all lived.

III. *Treatment.*—My limited experience does not justify me in dictating an absolute line of treatment, but it seems to me that emphasis should be laid upon the following indications:

(*a*) Shock was extreme in my case. I should advise that while preparations are being made for further treatment it should be attended to. In addition to the administration of stimulants, etc., salt solution thrown into the rectum at a temperature of 135° F. immediately improves the condition of the patient, not by absorption of it, but by the heat powerfully stimulating the vasomotor innervation of the alimentary and portal circulation, which in turn increases the heart action, and the general nervous condition markedly improves. I have verified this effect of hot rectal injections on dogs suffering from experimental shock.

(*b*) If shock is due to hemorrhage, intravenous transfusion should be performed immediately.

(*c*) Extraperitoneal wounds. In cases of extraperitoneal wound of the bladder the indications are to insure at the earliest possible moment complete and free drainage of urine from the bladder, and thus prevent infiltration and infection of the paravesicular connective tissue in the lesser pelvis. At the very outset, therefore, measures should be taken to explore the original wound, and by means of proper drainage to insure free escape of urine. This should be supplemented by permanent catheterization or perineal cystotomy. In cases in which urinary infiltration has already devel-

oped, attempts should be made to follow up the infected areas and to irrigate and drain these as thoroughly as possible.

(*d*) Intraperitoneal wounds. The fact that nearly all, if not all, cases of intraperitoneal vesical bullet wounds terminate fatally if not operated on justifies us in opening the abdomen in every case. It appears to me unfortunate that delay should ever be advised. If urine is found in the pouch of Douglas it should be mopped out. The bullet wound should be searched for, and if the bullet is located in the bladder it should be removed through this wound, the wound sutured with Lembert sutures, and the peritoneal cavity flushed with salt solution at a temperature of not less than 115° nor above 120°, until the cavity is clean, and a drainage-tube inserted. Before the patient leaves the operating table the bladder should be cleansed, and a good-sized rubber catheter left in it *per vias naturalis* to insure thorough drainage of the urine, and vesical rest. I am fully aware that some surgeons do not advocate permanent catheterization, but have failed to see the reason why. Perineal section and drainage will assuredly efficiently keep the bladder empty, but the additional traumatism caused and time consumed thereby is an additional burden for a seriously injured patient.

(*e*) Peritonitis. While primary laparotomy aims at preventing peritonitis, it may not always do so, and inasmuch as the abdomen is not, for one reason or another, opened for one, two, or three days after the injury is inflicted, and peritonitis has already begun or is well established, as it was in my case, you will pardon me for again referring to it in my conclusions. It is rare indeed for any case of septic peritonitis to make a recovery. It is incumbent upon the surgeon to perform a laparotomy even when peritonitis is unmistakable, to cleanse the peritoneal cavity of all perceptible inflammatory products, and to drain thoroughly. In this connection a distinction must be made between intraperitoneal irrigation and flushing. The former does harm by causing absorption of the infectious elements, while the latter removes them. The quantity and temperature of the salt solutions to be used are important. As already stated, I employed about thirty-five gallons at a temperature of 116° F. When the abdominal toilet is complete and the source of dangers thereby cut short, intravenous transfusion should in severe cases now be resorted to, and, if necessary, repeated several times. It sustains the vital spark while physiologic activity of the excretory organs is stimulated.

The following is a *résumé* of thirty-one additional cases reported since the paper of Bartels in 1878:

Case 1.—J. Douglas[1] relates the case of Captain S——: perfo-

ration of the bladder by gunshot wounds, 1814. A piece of bone passed through the urethra. Recovered after much suffering.

Case 2.—W. H. Berthelot[2] reports penetrating gunshot wound of the bladder; extraperitoneal. Recovered; no fistula.

Case 3.—Soldier[3] in 20th regiment, Crimean war. Gunshot wound perforating bladder; intraperitoneal; died third day.

Case 4.—John Griffith,[3] 57th regiment. Ball entered left buttock; pelvic bone shattered; urine flowed through wound. Recovered in ninety-seven days.

Case 5.—G. H. Hemming.[4] Penetrating gunshot wound of rectum and bladder; recovered; rectovesical fistula.

Case 6.—J. E. Randolph,[5] U. S. army. Private C Company, 23d Indiana. Wounded July 25, 1863. Bullet entered two inches from the end of the coccyx, penetrating bladder. April 2, 1864, a lateral lithotomy was performed; bullet removed. This was followed by recovery.

Case 7.—Dr. Dudlan,[5] U. S. army. Private E. H——, penetrating wound of the bladder, February 6, 1864. Bullet removed through left nates, followed by recovery.

Case 8.—W. W. Decky,[5] U. S. army. Lieutenant H——, perforating gunshot wound of the bladder, June 3, 1864. Bullet lodged in rectus muscle. Died June 16, 1864.

Case 9.—F. H. Leavitt.[6] Wounded May 12, 1865. Operated on July 11, 1865. Bullet entered symphysis pubis, lodging in bladder. Was removed through wound; no fistula. Extraperitoneal.

Case 10.—J. G. Fernandez.[7] Gunshot wound of bladder. Bullet lodged in bladder. Operation. Patient died the fourth day. Extraperitoneal.

Case 11.—P. F. Eve.[8] G. B——, private soldier. Gunshot wound of the bladder, bullet entering right gluteal region and coming out on left side. Perineal operation April 27, 1867. Recovery; no fistula. Extraperitoneal.

Case 12.—A. N. Denton.[9] Penetrating gunshot wound of the bladder. No operation; recovery. Extraperitoneal.

Case 13.—J. A. Greene.[10] Penetrating gunshot wound of the bladder, bullet entering right side; passed through bladder and lodged in the tissues on the left side. Recovered without operation. Extraperitoneal.

Case 14.—I. C. Chenu.[11] January 20, 1871. Bullet entered four centimeters above median line, on the line with the middle part of the sacrum, coming out on the right side of the root of the penis. For ten days did not urinate. Urine flowed through wound. Wound closed, and completely recovered at end of twenty days.

Case 15.—I. C. Chenu.[12] Intraperitoneal perforating gunshot wound of the bladder. Died same day.

Case 16.—I. C. Chenu.[13] Bullet passed through thigh, lodging in bladder. Recovered. Extraperitoneal.

Case 17.—I. C. Chenu.[13] Bullet passed through left thigh, fracturing trochanter major, and lodged in bladder. Does not state whether patient recovered or died.

Case 18.—I. C. Chenu.[13] Bullet entered above crest of left ilium and lodged in abdomen. Fecal matter passed through wound for several days. There was no peritonitis. The bladder was perforated by a piece of bone. Recovered.

The report of Chenu's five cases is very incomplete in the journal mentioned.

Case 19.—L. L. Staton.[14] Private soldier, wounded in 1865, the ball striking left thigh, passing upward and inward to Poupart's ligament and lodging in bladder. Operated April 16, 1877, the bullet being removed. Perineal operation. Patient lost a great deal of blood and was very weak afterward. Seen again April 18; was nearly in collapse. Transfused with blood from an old hen. Divided carotid artery and allowed the blood to flow into a tub which had been heated to 100° F., at the same time whipping it to remove the fibrin. About two ounces injected into the femoral artery. Recovered.

Case 20.—G. A. Collomore.[15] Gunshot wound of right pelvis, perforating the bladder. Died. Intraperitoneal.

Case 21.—T. Anderson.[16] Gunshot wound near apex of Scarpa's triangle, July 7, 1875. Bullet lodged in bladder. Operated on April 3, 1879. Median operation; bullet removed. Recovered.

Case 22.—Witfelshöfer.[17] Soldier shot August 16, 1878, bullet entering left thigh just below great trochanter; no symptoms for three months, when he had suppression of urine. Operated in Billroth's clinic; median operation, bullet removed. Recovered.

Case 23.—G. H. Bixby.[18] Gunshot wound of bladder, bullet entering three inches external to tuberosity of ischium, the urine flowing through wound. Operated on the fortieth day and a piece of shell weighing one ounce removed, operation being made through wound. Healed in six weeks, patient making complete recovery.

Case 24.—J. McF. Gaston.[19] Gunshot wound through bladder; extraperitoneal. No operation. Recovered.

Case 25.—N. Frank.[20] Gunshot wound of bladder, bullet entering through pelvic cavity into bladder. Extraperitoneal. Patient died in fourteen days.

Case 26.—C. P. Wertenbacker.[21] Gunshot wound May, 1888, bullet entering just below umbilicus, ranging downward. Wound healed, but patient suffered from cystitis. Operated November 12, 1888, suprapubic cystotomy being performed. Stone removed, with piece of cloth as nucleus. Recovered December 15. The doctor thinks bullet passed through bladder, leaving a piece of flannel shirt, which formed nucleus for stone.

Case 27.—A. C. Walke.[22] Gunshot wound penetrating abdomen midway between anterior and superior spine and median line. Intraperitoneal. Laparotomy eight hours after. Bladder sutured with Lembert suture and abdomen washed out with 1:5000 bichloride. No drainage. Catheterized eight hours after operation. Urinated naturally after that. Recovered in twenty days.

Case 28.—J. F. Carpenter.[23] Gunshot wound, ball entering right side of bladder at the trigonum, about three-quarters of an inch from floor. Made its exit in left wall at the floor of the trigonum and was lost in body. Suprapubic cystotomy performed; bladder sutured. Peritonitis eusued seventy-two hours later. Patient died the tenth day. Intraperitoneal.

Case 29.—E. Tappey.[24] Gunshot wound of the bladder. Extraperitoneal. Recovered.

Case 30.—J. C. Purdue.[25] Gunshot wound of the bladder, bullet entering one inch to the left of median line, passing through anterior and posterior wall of the bladder and rectum. Extraperitoneal. No operation; recovered. No fistula.

Case 31.—C. H. Andersen. Gunshot wound of the bladder. Bullet entered the right buttock behind the femur and entered the bladder, lodging in the posterior wall. Suprapubic operation. Bullet removed forty-two hours after receiving injury. General peritonitis supervened on third day. Abdomen opened and flushed out with about thirty-five gallons of saline solution. Tube drainage. Recovered the twenty-ninth day. No fistula.

The following are 285 cases reported by Bartels: Intraperitoneal 27, with no recoveries; extraperitoneal 258, with 220 recoveries, the percentage of recoveries being 85.2; injuries to rectum 60, being 21 per cent of total number; injuries to bones 131, 45.8 per cent of total number.

Thirty-one cases reported by Andersen: Intraperitoneal 7, recoveries 2, a percentage of recoveries of 28.6; extraperitoneal 24, recoveries 22, being a percentage of recoveries of 91.5; injuries to rectum 3, or 9.6 per cent of total number; injuries to bones 5, or 16.1 per cent of total number.

The total number of the above cases of Bartels and Andersen is 316, classified as follows: Intraperitoneal 34, with a mortality of 32, or 94 per cent; extraperitoneal 282, with a mortality of 40, or 14 per cent; injuries to rectum 63, or 19.9 per cent; injuries to bones 136, or 42.9 per cent.

No.	Date.	Surgeon.	Extra-peritoneal.	Intra-peritoneal.	Injuries to rectum	Injuries to bones.	Result.
1	1814	J. Douglas	1	0	0	1	Recovered.
2	1855	W. H. Berthelot	1	0	0	0	Recovered.
3	1858	Unknown	0	1	0	0	Died.
4	1858	Unknown	1	0	0	1	Recovered.
5	1860	G. H. Hemming	1	0	1	0	Recovered.
6	1863	J. E. Randolph	1	0	0	0	Recovered.
7	1864	Dr. Dudlan	1	0	0	0	Recovered.
8	1864	W. W. Decky	0	1	0	0	Died.
9	1865	F. H. Leavitt	1	0	0	0	Recovered.
10	1865	J. G. Fernandez	1	0	0	0	Died.
11	1867	P. F. Eve	1	0	0	1	Recovered.
12	1870	A. N. Denton	1	0	0	0	Recovered.
13	1871	J. A. Greene	1	0	0	0	Recovered.
14	1871	I. C. Chenu	1	0	0	0	Recovered.
15	1871	I. C. Chenu	0	1	0	0	Died.
16	1871	I. C. Chenu	1	0	0	0	Recovered.
17	1871	I. C. Chenu	1	0	0	1	No report.
18	1871	I. C. Chenu	1	0	1	1	Recovered.
19	1877	L. L. Staton	1	0	0	0	Recovered.
20	1878	G. A. Collomore	0	1	0	0	Died.
21	1879	T. Anderson	1	0	0	0	Recovered.
22	1879	— Witfelshöfer	1	0	0	0	Recovered.
23	1880	G. H. Bixby	1	0	0	0	Recovered.
24	1886	J. McF. Gaston	1	0	0	0	Recovered.
25	1887	N. Frank	1	0	0	0	Died.
26	1889	C. P. Wertenbacker	1	0	0	0	Recovered.
27	1890	A. C. Walke	0	1	0	0	Recovered.
28	1894	J. F. Carpenter	0	1	0	0	Died.
29	1894	E. Tappey	1	0	0	0	Recovered.
30	1895	J. C. Purdue	1	0	1	0	Recovered.
31	1900	C. H. Andersen	0	1	0	0	Recovered.

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BOOK REVIEWS.

TREATMENT OF FRACTURES. By Charles Locke Scudder, M.D., Assisted by Frederick J. Cotton, M.D. Price, $4.50. Philadelphia: W. B. Saunders. 1900.

An examination of this work will convince one that there is need of a thorough revision in our treatment of fractures. The general application of anesthesia in the diagnosis of these cases, the use of the Roentgen ray, and the treatment of fractures by open incision, under antiseptic methods, have greatly simplified the work in this department of surgery. In their preface the writers say they have made the attempt to distract the attention of the student from theories and apparatus to actual conditions, and so far as possible the student is encouraged to determine for himself the conditions to be met in each individual case. Mechanical simplicity is advocated, and splints of special manufacture are not encouraged, as their use draws attention from the fracture. An exact knowledge of anatomy, accompanied with accurate observation, is recognized as the proper basis for the diagnosis and treatment of fractures. The terms "simple" and "compound" are substituted by the terms "closed" and "open," as expressing their freedom from or liability to bacteriologic infection.

In speaking of the later results of fracture of the skull, the most important series of cases has been gathered by Dr. Bullard of the Boston City Hospital. These included seventy patients, thirty-seven of whom presented no symptoms when examined some time later. The most frequent consequences were headache, deafness, dizziness, and an undue susceptibility to the action of alcohol. From a study of the after-results Dr. Bullard is of the opinion that those cases in which trephining was performed have shown the best results.

In fractures of the face very ingenious appliances are described for maintaining the bones of the nose and jaw in position. The hard-rubber intradental splint of Moriarty mounted upon a wire form is described, an apparatus which permits the patient to open his mouth.

The treatment of fractures of the spine is summarized as follows: "Fractures of the arches of the vertebræ, whether open or closed, should be subjected to operation. Fractures and compression of the cauda equina, after six weeks' waiting for spontaneous recovery, should be treated by operation. In all partial lesions of the cord operation is demanded. All other fractures, showing a complete transverse lesion of the cord, should be treated expectantly."

In fractures of the clavicle the "bed treatment"—meaning the recumbent position with a small pillow placed between the shoulders—is said to give the best results. In the ambulatory treatment of this fracture the modified Sayre plaster dressing is said to be the best. The operative treatment of fractures of the clavicle is spoken of favorably, and is to be considered in those cases which have sharp fragments involving the blood-vessels, or in which there is pressure upon these structures.

In that most difficult of fractures—Colles's—the common retentive appliances, including an anterior and posterior splint, are advocated, but these have

been shortened in length to two or three inches, and are held in position by adhesive plasters. It is admitted that at best the results of the treatment of this fracture, so far as early restoration of joint function is concerned, are unfavorable. It is to be regretted that in this, the latest and perhaps one of the most complete works on fractures, no mention is made of the treatment of this particular fracture by massage, without retentive apparatus, a method which has secured admirable results in the hands of some surgeons.

There is a chapter on the Roentgen ray and its relation to fractures, by E. A. Codman, who says that the *x*-ray is of the utmost importance in giving us a knowledge of the pathology and treatment of fractures, and this leads to greater exactness. Little details that would otherwise escape notice are brought out, and the patient is spared painful manipulation which may bruise and lacerate tissue. The question of a cutting operation to reduce otherwise intractable fragments may be decided by an exact knowledge of the position of the parts. The advisability of interference by making a simple fracture compound is one that is attracting more and more attention, and will lead to its being made the rule in cases where a perfect result cannot be expected by the simple method. When asepsis can be practiced there is little danger of making an incision, and the time saved in cases where approximation of the fragments is prevented by loose bits of bone or soft parts more than compensates the slight risk. The *x*-rays are of more assistance in studying the pathology of fractures than any other method.

The author takes a rather conservative view of the ambulatory treatment, which he thinks does not perfectly immobilize, and therefore can never be a perfect method of treatment. Complications, such as fat embolism and pressure sores, may occur. It is wise to allow the injured limb to rest while the reparative process is beginning, and muscular relaxation is desirable. The author believes that in certain carefully selected cases of fracture below the knee, particularly of the fibula, the method may be applied without doing harm. A consideration of the ambulatory treatment of fractures should lead to a more careful and early use of the plaster-of-Paris splint in fractures of the leg and a proper application of the long splint or its equivalent in fractures of the thigh, and to the early use of crutches and the high sole on the well foot in both of these lesions.

The work is well issued by the publisher and contains 585 illustrations, mostly original. It forms a splendid contribution to surgical literature, and if criticism were to be passed upon it, we would say that it is too conservative, though perhaps this is a good fault in a work which advises the profession in subjects so often fraught with legal complications.

SURGICAL DISEASES OF THE GENITO-URINARY ORGANS. By G. Frank Lydston, M.D. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1899.

The work of Dr. Lydston is a complete treatise on genito-urinary surgery. It is a comparatively large volume of 1011 pages, and easily ranks as the leading American text-book on this subject. If we were to accept the judgment of the *Edinburgh Medical Journal*, we would say that it was the leading text-book in the English language.

The author starts out with a chapter on genito-urinary and sexual hygiene, which includes a description of the relation of rest and diet to the management

of genito-urinary diseases. He takes an early opportunity to air what he calls a few "heresies," but for the most part the work is characterized by a practical common sense and a directness of statement that is rather refreshing in these days of much theorizing. The general morbid phenomena incidental to the surgery of the genito-urinary organs is opened by a discussion on urinary or urethral fever. The author describes several varieties, or rather degrees of the affection, among which we note nervous rigor, traumatic surgical fever, toxemia following severe shock, septicemia, sapremia, chronic urethral fever, and cases of a mixed type. From these it will be seen that he discusses the topic broadly. He is of the opinion that the occurrence of these various symptoms may be prevented in a large majority of cases by gentleness in manipulation and a careful study of the case at the time of each instrumentation.

Part II, one of the longest of the book, deals with urethral stricture and gonorrhea. The well known views of Lydston in the treatment of stricture are quite fully exploited. In opening the discussion on the treatment of urethritis he says that, manifold as are the specifics, no system of treatment has materially shortened its average severity and duration, save those measures based upon its self-limitation, with due appreciation of the inadvisability of attempting to jugulate it after it has fairly developed. Such measures have accomplished much—specifics, nothing. The statements of surgeons who claim to cure cases of virulent urethritis in a week or ten days, or perhaps less, are to be discredited quite as much as the claims of the lay veteran who has a wonderful three-day cure. A remedy for self-administration that will cure the majority of cases in from three to six weeks will be hailed as one of the greatest discoveries of the age. What has been said of the fallacy of most forms of specific treatment does not apply to permanganate irrigations, providing treatment is begun during the incipiency of the disease and carried out for from three to six weeks. Simple urethritis, if included in the statistics, will give a relatively larger proportion of cures, and in a shorter time.

In discussing organic stricture the views of Otis are largely adhered to. In the writer's opinion the normal narrowings of the urethra, as claimed by Wire and Sands, or which are regarded by Otis as abnormal, have a distinct relation to the development of stricture at certain sites. These points of relative inelasticity doubtless become congested, and granular patches form. Necessarily, they are the places where a narrowing of the canal occurs. In the treatment of stricture a wise eclecticism is advised, the author giving no less than ten methods of dealing with them, which, with the exception of the first named—caustics—may all be used with advantage in meeting the indications presented by various cases.

Parts IV and V are excellent discussions of chancre. We give a synopsis of the writer's general conclusions on the treatment of syphilis, believing that the reader will find in them a fair index of the judicial style of the work and the breadth in which the various subjects are approached: The cure of syphilis should be attempted by specific medication, but certain general principles of management should be employed. No attempt should be made to destroy the chancre; irritants are to be avoided, as there is little danger of serious local destruction. The time element and the necessity of caution in diagnosis should be remembered. Treatment should not be begun until a positive diagnosis has been made. All forms of alcohol and tobacco should be forbidden, but otherwise there should be little restriction in diet. The patient should be told that the natural course of syphilis is from eighteen months to three years, and that

mercury properly used is absolutely necessary in the majority of cases. Hot baths are necessary throughout the entire course of treatment. The popular Hot Springs are not necessary, but may be of assistance in rare cases; they do not lessen the necessity for medical treatment. Lesions in syphilitic patients are to be diagnosticated and treated upon their merits. "Once syphilitic, everything syphilitic," is fallacious reasoning. The laity should be given to understand that syphilis, if properly treated, is a curable affection. In the main, mercury and the iodides are to be used. In its care there should invariably be close attention to complicating conditions, and attention should be given the patient as well as the disease.

THE PATHOLOGY AND SURGICAL TREATMENT OF TUMORS. By Nicholas Senn, M.D., Ph.D., LL.D. Second Revised Edition. Price, $5.00. Philadelphia: W. B. Saunders. 1900.

Several years has elapsed since the appearance of the first edition of Senn's work on tumors. In the preface to the second edition he says that, during the time that has elapsed since the appearance of the first edition, no great discoveries or advancements have been made concerning the nature and treatment of tumors. The parasitic origin of malignant tumors continues to attract the attention of pathologists and surgeons, but we have made very little progress in establishing this theory by actual facts. From this it is evident that the author adheres to his original statement made in the preface to his first volume, that a tumor is due entirely to an erratic cell-growth from a matrix of embryonal cells of congenital or postnatal origin; the enlargement of a part of an organ caused by chronic inflammation, which so often simulates a tumor, is due to proliferation of preexisting mature cells acted upon by pathological microorganisms or their toxins, and to the cell migration characteristic of inflammation; while a retention-cyst essentially consists of an accumulation of a physiological secretion in a preformed glandular space, the result of mechanical obstruction. The classification of tumors in this work is in accord with this theory of the origin of tumors. If it should be shown in the future that tumors are of microbic origin, such growths would necessarily be classed among the granulomata. Embryonal origin of tumors is insisted upon, and the same definition is given in three different places in the opening chapter on the nature of tumors. The morphology and multiplication of tumor cells are described somewhat imperfectly, as are the anatomy and biology of tumors. These are supplemented by the chapter dealing with the pathology of tumors.

An exceedingly interesting chapter is that dealing with tumors in plants and animals.

In discussing the etiology of tumors, the author is inclined to attach considerable importance to heredity, and he explains this in relation to the theoretical embryonal matrix as a lessened vital resistance. In this respect heredity bears the same relation to the causation of tumors as climate, age, sex, traumatism, irritation, and inflammation. The idea of contagion is disposed of in relation to carcinoma and sarcoma with the italicized statement, "*there is not a single well-authenticated case on record in which the disease was transmitted from man to man or from animal to animal by contagion.*"

An absolute distinction is made between benign and malignant tumors, and the author rejects the idea of semimalignancy as applied to some of these growths. He says that a tumor is either benign or malignant; there is no

connecting link between them. He explains recurrence of certain tumors commonly thought to be benign as due to the fact that after their removal certain daughter tumors are left. Local infection and regional infection, as well as recurrence, are explained upon these lines. He recognizes that benign tumors may become malignant, but this only takes place when the embryonal cells under the influence of general causes proliferate, and this implies a diminished physiological resistance on the part of adjacent tissues. Such an explanation obviously fits into the theory that regards all tumor growths as displaced embryonal cells. Upon finishing this part of the work, one is impressed with the fact that with this central idea in mind all other facts are made forcibly to correspond with it. It is a fascinating and most satisfactory theory, easy of comprehension, but after reading the chapter one asks himself, "Is it true?"

The first part and smaller portion of the work is devoted to the theoretical discussion as to the origin of tumors. The remaining six-sevenths is devoted to the diagnosis and surgical treatment of the various tumors. For this portion of the work we have nothing but praise. There is no work in the English language of equal fulness, and at the same time of equal practical use to the surgeon. It is especially rich in its description of operative technique. Illustrations are exceptionally well done, and in only one instance do we note a reproduction of a photograph taken from an operative field, in this case being after removal of the upper maxilla for fibroma. Like most plates of this kind the details are so obscure that the plate is of no value as an illustration.

INJURIES TO THE EYE AND THEIR MEDICOLEGAL ASPECT. By S. Baudry, Professor in the Faculty of Medicine, University of Lille, France. Translated by Alfred James Ostheimer, Jr., M.D., of Philadelphia. Revised and Edited by Charles M. Oliver, A.M., M.D. With an Adaptation of the Medicolegal Chapter to the Courts of the United States, by Charles Sinkler, Esq., of the Philadelphia Bar. Price, $1.00. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1900.

In this small work we have a description of the traumatic lesions of the eyebrows, eyelids, conjunctivæ, and of the orbit and its contents. The same description applies to the lesions of the eyeball, and in this chapter we have a description of traumatism of the cornea, sclera, iris, choroid and ciliary body, retina, crystalline lens, vitreous humor, and traumatic lesions of the eye as a whole. There is nothing in this first portion of the work that calls for special comment. The traumatisms here described are those that are met with in any ophthalmological practice, and the estimation of their gravity and their relations to accidents are to be measured upon ordinary surgical lines.

In the chapter on simulated or exaggerated affection of the eye, the author considers what is the most difficult problem for the specialist, and one that is fraught with peculiarly significant legal relations. He says that simulated and exaggerated disorders of the eye are numberless. Twice only has he had occasion to observe a simulated form of conjunctivitis. In one the disorder was produced by the instillation of a strong solution of sulphate of copper, and in the other by the ashes of ordinary smoking tobacco. In any conjunctivitis confined to one eye and of a rebellious type, which without apparent reason becomes suddenly worse in a subject whose interests lead him to practice deception, a detailed examination of the conjunctiva should always be made, particularly of the upper cul-de-sac. Hemorrhage into the anterior chamber, the retina, and

the choroid, or the vitreous humor, cannot, as a rule, be considered of traumatic origin, unless the cause has been elicited by a process of strict exclusion. Cataract in its relation to traumatism forms an especially difficult subject from a medicolegal standpoint. In detachment of the retina, where there are hemorrhages into the vitreous and other symptoms of local injury, it may be safely concluded that the separation is due to traumatism.

The most valuable portion of the work is that dealing with the detection of feigned amaurosis and amblyopia. This chapter contains a description of the objective and subjective methods used in detection of malingerers.

The chapter on medicolegal expert testimony is general in scope, and is equally applicable to medical expert testimony in any of its branches. It closes with the recommendations of Judge Endlich to the Pennsylvania Bar, on proposed measures looking to a reform of the introduction of expert testimony. These are: (1) The formation of a stricter definition of expert capacity; (2) the reasonable limitation of the number of experts to be summoned in any case; (3) the designation of experts by the court upon nomination by the parties; (4) the abolition of the hypothetical question; (5) the summoning by the trial judge of an expert of his own choice to serve as an assessor, or as a witness to review the expert testimony already in, or as both; (6) the payment of expert testimony out of the public treasury, at least in the first instance.

Diseases of the Nose and Throat. By J. Price-Brown, M.D. Price, $3.50. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1900.

This is a comparatively small work of 471 pages, in which the author has attempted to compress what is essential for the practitioner in the treatment of the nose and throat. It adds another to the long list of volumes devoted to the nose and throat that have appeared within the last two years, and is no better and no worse than many which have preceded it. It is a good example of the necessities of publishers, who of late have felt it incumbent upon them to have all departments represented in their list of books. If one publisher issues an anatomy, the others are forthwith impelled to do likewise. The result is an enormous multiplicity of text-books, with very little advantage to medical science, and not a little additional burden to libraries and to the profession.

Whatever the motives that may have led to the preparation of this particular work, we find in its pages much to commend and very little to condemn. It is a compact work, well adapted to the needs of the undergraduate and for the general practitioner. There is an excellent description of the anatomy of the nose and throat, in which the illustrations are largely taken from other writers, but included in the text are a number of colored plates taken from the frozen sections in the Primrose Anatomical Museum of Toronto. These afford an accurate idea of the relations of the nasal cavity and the pharynx to surrounding structures. There is an excellent description of the different instruments employed in nose and throat operations, and an absence of the rare and more complicated operations which frequently fill the pages of text-books of the nose and throat, and which are of doubtful value to the general practitioner and student.

EDITORIAL COMMENT.

THE CAUSE OF SCURVY.

The older writers believed that scurvy was due to the excessive consumption of salted meats. A later view attributed the disease not so much to salted foods as to the absence of fresh vegetables, and particularly the absence of vegetable acids. A careful study of the whole question led to the addition of lime juice to the diet of soldiers and others who were deprived of fresh food. This was believed to be a prophylactic against scurvy, but its efficacy in this respect has been doubted of late years. The marked decrease in scurvy among soldiers is attributed to the shorter voyages, due to the use of steam, and to improved hygienic surroundings. Damp and close quarters have been thought by some to be the sole cause of the development of this affection.

Recently, F. G. Jackson and Vaughn Harley, in *The Lancet* of April 28, 1900, have made an experimental study of the whole subject. They give some exceedingly interesting data disposing of these theories. Numerous historical outbreaks of scurvy are carefully studied. Some expeditions suffered from violent outbreaks of the disease when an abundance of lime juice was taken daily; others again, who had no lime juice and were placed under the most appallingly unsanitary conditions and endured the greatest hardships, were entirely free from the affection. A study of these cases shows that those parties who were free from the scurvy were supplied with an abundance of fresh meat. In one party which spent nine months, including a winter, after the loss of their ship, upon Franz Josef Land there was no case of scurvy, though they had no lime juice and lived entirely upon fresh meat and frozen blood. Another instructive case was that of six priests who lived in a small hut in Northern Siberia, and who subsisted almost entirely upon salted fish, tea, and bread, their religion not allowing them to eat meats. A boy who was left with them lived largely upon bear meat. He was not affected with scurvy, while the six priests all died before the spring with this disease. From this and other facts it appears that neither lime juice nor fresh vegetables prevent scurvy; it is not the absence of these that is the cause of the disease, but it is a disease caused by the eating of tainted food.

The writers, accordingly, began an experimental study to test

these conclusions. For their purpose they chose monkeys, though just why this animal was taken it is difficult to say; it is stated by them that it was because of its resemblance to the human. Three groups of animals were experimented with. The first was fed upon a mixture of boiled rice with fifty grammes of meat taken from a freshly opened can of Australian preserved meat. In preparing the rice it was boiled with the meat, so that any meat juices might be absorbed by the rice. The second group was fed upon the same quantity of a similar mixture, but previous to the mixing of the meat with the rice the can was allowed to remain open for some days. In these cases the meat was not thought to be bad, but it was sour and had some odor. The third group was given exactly the same diet as group two, but in addition an apple or banana was given every day.

All three groups of monkeys soon succumbed to the diet. Those receiving the meat from the freshly opened can soon developed diarrhea and became rapidly emaciated, but there was no mucus or blood in the stools. In the second group diarrhea developed more quickly and emaciation was more rapid, blood and mucus were found in the stools, and at varying periods of from twenty-five to forty days the gums became spongy, ulcerating in the majority. In the third group the symptoms were precisely like those found in the second, but the ulcerations were less marked and the diarrhea and emaciation not so severe. This difference was thought to be due to the fact that the monkeys ate less of the mixture of rice and meat in consequence of their receiving fruit.

The blood examination of these monkeys showed the changes commonly found in scurvy, namely, a marked decrease in the hemoglobin, an increase in the leucocytes, but no diminution of the blood-corpuscles, with an increase in the fibrin, and there was a lessening of the time required for coagulation.

These experimental studies are of striking interest, serving as they do to confirm the fairly well based view that scurvy is due to ptomaine poisoning, and that these ptomaines are due to badly preserved food. If this theory is correct, not a little light is thrown upon the prevalence of scurvy in whaling ships, particularly those crossing the equator into the antarctic regions, where some of the most severe cases of the disease have been noted. Here the food supply of the ship had been exposed to the heat of the tropics, and imperfectly preserved as it was by the admixture of salt the fermentative processes took place, subsequently to be suspended by the cold of the antarctic regions. The antiseptic action of the cold does

not destroy the ptomaines which have already formed, and probably this is the chief danger in the use of preserved meats. The attacks of indigestion which followed the use of the so-called canned roast beef furnished the American soldiers during the war with Spain is amply confirmed by the experiments upon these monkeys. They all suffered from diarrhea, and so did the soldiers who ate the canned meat in Cuba. The experiments would have been more valuable if animals could have been obtained that were accustomed to a meat diet, and it is to be regretted that the writers did not conduct two series of parallel experiments, in which monkeys were supplied with the same quantity of fresh meat, cooked with rice in the same way. Had this been done, and these animals developed no untoward symptoms, the results would have gone far toward settling conclusively the view that scurvy is dependent upon tainted food and not upon the salted meats or unsanitary conditions, though these may contribute their share in the production of scurvy in depressing the vital powers. The experiments and the whole study are of rare interest, in view of the light which is thrown upon meat preservation and canning operations. Further studies should be made upon the canned meats to ascertain what these poisonous substances are, that they may be isolated and rules established that will be guides in the practical preservation of foods.

MIGRAINE FROM EYE-STRAIN.

The extended discussion of the last few years has conclusively settled the importance of eye-strain as a cause of headache. Accurate figures can never be given of the proportion of headaches that are due to this cause, as circumstances surrounding the number of patients visiting a particular clinic are so variable that no accurate comparison can be made. It is generally agreed that headaches of ocular origin are characterized by certain symptoms which enable us to reach a probable diagnosis in the majority of cases; every such diagnosis must, of course, be confirmed by a careful study of the refraction of the person.

The importance of the relation of eye-strain to headaches is conceded by all neurologists and ophthalmologists. There is equal unanimity of opinion that migraine, whether of the simple or ophthalmic variety, is rarely if ever due to eye-strain or accommodative defects. A number of cases are on record in which patients have suffered from ordinary ocular headaches associated with migrainous attacks. A relief of the ocular defect has cured the continuous

ocular headaches, but the migrainous attacks have recurred with their original frequency.

It is interesting to note occasionally an opinion that runs counter to some generally accepted medical truth. Not infrequently the newer view is correct, particularly if it is dealing with an opinion that has come down from the distant past, and for which the exact facts upon which it rested are no longer available, if it ever rested upon any. When, however, the individual opinion runs counter to a view which is quite universal and of comparatively recent development, and based upon a careful study of all available material, then the minority is apt to be wrong. We note in a recent communication (A. L. Ranney, *Buffalo Medical Journal*, May, 1900) a statement that "sick-headaches" in patients under 40 years of age are almost invariably due to some type of eye-strain. If, in the foregoing, the writer understands by sick-headache what is commonly understood by the term migraine, we do not agree with him as to the frequency of eye-strain in its production, and we further believe that he differs from the great body of neurologists and ophthalmologists who have carefully studied this question. Migraine is not by any means infrequent, and if it was easily remedied by treatment of the accommodation, many series of cases would have undoubtedly appeared in the literature. The contrary is the fact. Careful observers distinctly state that while a very large proportion of headaches are due to ocular origin and are relieved by correcting refractive errors, yet migraine does not seem to be associated with such refractive errors, and even where it is, correction does not relieve the migrainous attacks.

THE DISPENSARY ABUSE.

We have had occasion in times past to refer to the growing evils of dispensary practice. The evils attending these institutions in New York City had at last become so flagrant as to call for legislative interference. It is less than a year since the law was adopted in New York, and as yet there have been comparatively few reports on the value of the statute. F. S. Kennedy, in an article in the *Brooklyn Medical Journal* for May, 1900, tells some of his personal experiences in dispensary work. One institution he found admirably managed, and we fancy that not many duplicates of it will be found in any of our large cities. In this institution, when a vacancy occurs on the staff, it is filled by a written and practical examination conducted by physicians not connected with the dispensary, and

open to the entire profession. All the members of the staff are remunerated at the rate of $200 a year for every hour spent at the clinic. Attendance is required for three or four hours a day every day in the year except Sundays and holidays. For a daily attendance of three hours the physician receives $600 a year. A chief of staff is also appointed, who must be a physician, and who receives a salary of $100 a month; also an assistant chief for the work of assigning applicants to the proper department, and who is especially skilled in the diagnosis of contagious diseases.

After working in such an institution, he desired to secure dispensary work in Brooklyn. As a professional brother puts it, "it would give him legitimate advertising by means of the dispensary cards carried by the patients to their homes." An opening occurred for him to act as a substitute, during which time he was constantly urged to persuade the patients to make as large a contribution as possible to the tin boxes on the wall. At the same time he was instructed in writing prescriptions to give preference to tablets rather than to liquid medicines, as they were cheaper, and a good price could be obtained for them without the trouble of mixing compounds. After the day's work was over the little tin boxes on the wall were opened by the chief, and the contents were placed in his overcoat pocket, often without being counted. It is needless to say that under such a system the staff was constantly changing, and would have continued to do so if the chief had not resigned.

The writer gives some striking instances of mismanagement of dispensary practice. In some instances it is made to act as a feeder for the private practice of the physicians on the staff; he also notes the immense number of cases that are treated who are not deserving of such charity. He says the obvious conclusion is that a dispensary is exactly what the management and staff want it to be. If these bodies are in accord with each other and with the laity and profession, the maximum amount of good can be obtained. If the management are lax and careless, if the staff form cliques for personal gain, and if the dispensary is used as a "run in" for the physician, the whole thing is bad.

In the discussion that followed the reading of Dr. Kennedy's paper, a description of the methods employed in Washington was given, which seems to be a solution of the dispensary evil. In that city, when a patient applies to a hospital or dispensary, he is treated and no questions are asked. He is then given a card, which he presents to the Bureau of Charities for investigation, and no further treatment is given unless that body reports that the applicant is

worthy. This plan has now been on trial in the District of Columbia for four years, and the medical profession there unite in saying that it is one of the best measures ever devised to solve the dispensary evil.

ORIGIN OF MALPRACTICE SUITS.

The charge is frequently made in this country that the majority of malpractice suits have their origin in some careless or intentionally critical remarks on the part of medical men. A remedy for this is to be found in closer professional unity and a broader and more ethical spirit among practitioners. An examination of both the lay and medical press in France shows a most deplorable standard of medical ethics in this respect. A most flagrant case is reported by the Paris correspondent of *The Lancet* (April 21, 1900). The case was that of a young woman suffering from contracted pelvis with albuminuria and threatened eclampsia. The medical attendant, after consultation with another practitioner, resolved to induce premature labor. The united efforts of the two practitioners did not succeed in accomplishing this result, and they sent the patient to the maternity hospital of the town, with a view to cephalotripsy being performed by the *accoucheur en chef.* The latter, a young medical man, did not consider the operation urgent, and as a result of this neglect the young woman died at the end of two days. Some days after this the first medical man was summoned before a magistrate, at the instance of the husband of the deceased, on the charge of homicide through imprudence, the charge being supported by a declaration made by the hospital accoucheur, who laid all the blame for the disaster upon the two practitioners. A necropsy was ordered, which proved that the death was due to natural causes, and the case terminated in acquittal. The behavior of the young accoucheur belonging to the hospital aroused such indignation that the local medical society of which he was a member unanimously expelled him, on the ground that he had committed a serious breach of professional ethics.

This instance, and numerous others which are reported at frequent intervals in the French press, should teach us that we are by no means lacking in professional courtesy. The standard of professional ethics in Germany, England, and France is no higher, if as high as it is in this country. Unquestionably the medical education of the average medical man abroad is superior to that in this country, but in this we are rapidly overtaking them and may soon surpass

their standards. That the State examination and higher medical education do not always mean a raising of the ethical standard is shown by such instances as the above.

CONTRAINDICATIONS OF STRYCHNINE.

Now and then one sees in the literature (though less frequently than formerly) that strychnine is indicated in paralysis. Such a statement is about as valuable as to say that a certain remedy is good in heart disease, or dropsy, without further specification as to the indications to be met by the particular remedy. Strychnine is a powerful remedy when given in full physiological doses of one-twentieth to one-twelfth of a grain three or four times a day. In certain forms of paralysis it is useful, but its value is largely confined to those due to involvement of the peripheral nerves, or in which the weakness is due to one of the varieties of progressive muscular atrophy. In paralysis of central origin it is of doubtful efficacy, if it does not do harm in many cases. We think that the untoward effects of strychnine in central lesions would have been much oftener described in the books if it had not been for the fact that the strychnine was given in too small doses. Tonic doses of strychnine, those ranging from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain, are quite devoid of effect upon the vascular and nervous apparatus, and the drug when administered in such dose has very little effect, either for good or for evil.

If given in large doses after hemiplegia, there is certainly danger of the increased blood-pressure leading to a second rupture of the weakened arteries, providing the case is one of cerebral hemorrhage. If, however, it is due to thrombosis, there would probably not be the same danger, but the primary conditions underlying both thrombosis and hemorrhage are so nearly alike that it is easily possible that in certain patients who have had thrombosis it may result in hemorrhage. Strychnine in full physiological doses is usually contraindicated in all forms of hemiplegia. Most writers are agreed that it is contraindicated in tabes, and the literature contains numerous references to patients who have been made distinctly worse by large doses.

ABSTRACTS.

MEDICINE.

Serum Diagnosis of Typhoid Fever.—

William G. Savage, in the *Clinical Journal* of May 2, 1900, says that the so-called Widal test depends upon the clumping and cessation of movement in a broth culture of the typhoid bacillus when seen in a hanging drop. We cannot say in every case where clumping or cessation of movement occurs that the patient from whom the blood was taken is suffering from typhoid fever. Sometimes the bacillus typhosus in a broth culture will clump spontaneously. This source of error is easily eliminated by examining the culture before the serum is added. The cause of this spontaneous clumping is not known. Another source of error is where an examination is being made for suspected typhoid and the disease may be either influenza, anemia, or some other condition easily confounded with it. In such cases the patient may have had typhoid fever years before. It is claimed that the Widal test may be obtained years after the infection. Errors in such cases are difficult to avoid.

Normal serum, if diluted slightly, say one in ten, may in certain cases cause some clumping. If the serum be further diluted and again examined with typhoid broth, these changes do not take place. The writer believes that if the serum be sufficiently diluted, clumping with normal blood never takes places. A dilution of one in thirty or one in fifty, or even higher, is necessary to prevent failures from this source. The sera of diseases other than typhoid are cited by some writers to give positive reactions. Cabot points out that scarcely any two observers find these pseudoreactions in the same diseases, and in all probability, with a careful technique and perfect dilution of the serum, they never take place.

The blood in enteric fever does not always give a characteristic reaction. This may be divided into three classes: (*a*) The test may be made too early in the course of the disease; the reaction is generally obtained about the end of the first week. (*b*) There are cases in which the reaction is known to intermit; for example, it is present one day, absent the next, and again present the next day or in a few days. These cases are probably very infrequent and do not seem to be a common cause of error. (*c*) A few cases of proven enteric fever yield no serum reaction throughout the disease.

The first two causes of absence of reaction obviously teach that

in negative cases we should repeat the examination of the blood at a subsequent date. A negative reaction, though not so valuable as a positive one, is yet of great value. Efficiently performed, the test is correct in from 90 to 95 per cent of the cases.

In collecting the blood for making an examination, it may be done by allowing a drop to dry on a glass slide, or it may be drawn into a capillary pipette and the ends sealed. The latter permits of the serum being separated from the blood without the admixture of corpuscles, thus making it somewhat more accurate. If the dried blood is used it is mixed with a little water or inert fluid, and a small quantity is taken up in a loop.

Care should be taken in obtaining the typhoid bacillus, as those which have a tendency to clump spontaneously are valueless. Some cultures of the typhoid bacillus give a prompt reaction and others do not. The author describes one case in which the test was made with four different cultures of the typhoid bacillus. In one a well marked reaction was obtained, in another it was doubtful, and in the remaining two there was no reaction. He uses a culture of agar from two to six weeks old kept at room temperature. From this a tube of sterile broth is inoculated and grown at 37° C. This culture should not be more than twenty-four hours old if grown at a high temperature.

The serum diagnosis of typhoid may be carried out without the aid of a microscope, by what is known as a sedimentation method. This, by some writers, is considered even more valuable than the microscopic test, and is performed by diluting the serum, which for this purpose must be obtained in capillary tubes with twenty-four parts of normal saline solution, and then added to equal parts of a fresh broth culture of the bacillus typhosus. If at the end of twenty-four hours the solution shows a uniform turbidity, the reaction is negative. If, on the other hand, well marked plugs are seen at the bottom of the fluid or along the sides of the tube, the reaction is positive. The method requires no watching, but performs itself.

Gonorrheal Arthritis.—

James Stewart, in the *Montreal Medical Journal* for March, 1900, has an article upon this subject based upon the study of forty-eight cases, treated in the Royal Victoria Hospital. All the cases, excepting one, were young adults, the average age being about 30 years. An attempt was made to learn whether a previous rheumatic history predisposed to involvement of the joints, but no such relation could be made out. It was clearly shown that one attack of gonorrheal rheumatism predisposed to another, in case of a fresh

infection of the urethra, as in nearly one-third of the entire number —fifteen cases—there was a history of previous attacks of gonorrheal arthritis. Mild attacks were quite as likely to be followed by arthritis as severe ones. Twenty-six cases had occurred as a complication of the first attack. Eighteen cases occurred in the acute stage, before the end of the third week. Twenty-two occurred later in the disease; and in eight cases, mostly women, it was impossible to ascertain the stage of the urethritis. In five cases the arthritis occurred more than a year after the onset of the gonorrhea, which had become a chronic gleet.

Twenty-four patients entered the hospital more than a month after the onset of the arthritis, and almost all were suffering from urethritis in some form. In twenty-five cases there was acute or subacute gonorrhea, with visible discharge; in fourteen some form of chronic urethritis or stricture; in four the genito-urinary system was found to be normal.

The cases differed widely in the mode of onset. In four it was like that of an acute fever, the arthritis becoming a marked feature after two or three days. Ten cases were characterized by a sudden onset of pain in one or more joints, generally occurring at night. In the remaining thirty-four the onset was more or less gradual, with pain in some one joint, gradually becoming worse and usually extending to other joints in succession, but not subsiding in the first joints as others were involved.

The clinical symptoms of the disease developed so gradually that it was difficult to make any classification. The commonest form resembles subacute rheumatism, the inflammation beginning suddenly or gradually in one joint and extending to others, with moderate fever and other constitutional disturbances. In most of the cases which were admitted early the results were good. More than half the cases sustained some damage to the joints. There was a group of seven cases where the infection was confined to the heels and soles of the feet. Taking all the cases together, the knees were most frequently attacked, being involved in twenty-nine cases: then, in the order named, come the heel and plantar fascia, the ankles, the small joints of the feet, the elbows, the shoulders, the wrists, and the small joints of the hands. The complications were few, the most common being endocarditis, which occurred in eight cases. Iritis occurred in four cases.

The results of treatment were unsatisfactory, though no deaths occurred. Nine were discharged cured, thirty-five were improved, and in four cases, all chronic, there was no improvement. The acute cases were treated with strict rest in bed and low diet. No

internal remedies were found to be of value. Salicylates were given in full doses in twelve cases, but in none of these was there a marked reduction of temperature or relief of pain noticed. Hot-air baths by the Tallerman-Sheffield apparatus were used in thirty-six cases. These were repeated daily, or every other day. Under this treatment the general condition of the patients improved, and there was some gain in weight. In practically all the cases of mild or subacute arthritis the baths gave marked relief from pain and greater freedom of movement for the time being. The action could not be termed specific, as most of the cases were left at the end of some three or four weeks with some pain in the joints and stiffness, but the results were better than those obtained under ordinary local measures. In chronic cases the relief from pain was a marked feature.

Splenic Anemia.—

The *Boston Medical and Surgical Journal* of April 26, 1900, contains three articles upon this rare and interesting disease. The first is by R. C. Cabot, who writes a historical sketch of what he terms splenic pseudoanemia, which in the body of the article he rejects as improper, as he does also the term splenic anemia. The name which he would give to this disorder is anemia with splenic enlargement. Comparatively few cases have been reported until the appearance of Osler's article describing fifteen cases. In the diagnosis of the affection, Cabot says that we must exclude cases of typical splenic enlargement without anemia, which are not very uncommon. We must also exclude pernicious anemia, in which a slight enlargement of the spleen is almost always present. The diagnosis in these cases depends upon the constitution of the blood, which in the disease splenic anemia is characteristic of an ordinary secondary anemia. It must also be distinguished from cirrhosis of the liver, and this is especially difficult, as there is sometimes an associated enlargement of the liver, and many of the abdominal symptoms are common to both affections. In some cases an accurate differentiation of this condition from chronic malarial poisoning is also difficult, unless the parasites are recognized in the blood. From pernicious anemia the disease is easily and quickly distinguished by the blood examination. The anemias of children are very frequently associated with enlargement of the spleen, with or without leucocytosis, and their classification is still unsatisfactory. As a rule, such cases are associated with and usually considered secondary to syphilis, and their existence may sometimes serve to differentiate it from the disease under consideration.

The prognosis in this disease is given differently by writers.

According to Osler, it is relatively favorable, some of his cases, lasting twelve years or more, being still in good health. In the treatment splenectomy is to be considered. It was performed in one of Osler's cases, with apparently favorable results. It is a reasonable method of treatment, in view of the fact that splenic enlargement seems to have preceded anemia in all recorded cases in which the matter has been looked into thoroughly.

J. L. Morse (*ibid.*) gives a history of three cases of splenic anemia which have come under his observation. The following table shows the characteristics of the blood in the three cases:

	Case I.	Case II.	Case III.
Hemoglobin	57 per cent.	52 per cent.	65 per cent.
Red corpuscles	3,400,000	3,128,000	4,488,000
White corpuscles	5,200	6,520	8,080
Small mononuclear	16 per cent.	22 per cent.	25 per cent.
Large mononuclear	5 per cent.	2 per cent.	5 per cent.
Polynuclear neutrophiles	76 per cent.	75 per cent.	66 per cent.
Eosinophiles	3 per cent.	1 per cent.	4 per cent.

Another case was reported by Henry Jackson, and a fourth by J. M. Jackson and G. S. Hill. The blood examinations were practically the same as those shown in Morse's three cases.

Henry Jackson has carefully examined the records of the Boston City Hospital, going over all the cases diagnosticated as Hodgkin's disease, pseudoleukemia, and pernicious anemia, an examination which convinced him that very few if any cases of splenic anemia have entered the Boston City Hospital, from which it might be argued that Banti's disease is rare.

The Technique of Lumbar Puncture.—

L. A. Conner, in the *New York Medical Journal* of May 12, 1900, says that puncture should be made in the sitting posture for adults and older children, while infants should be laid face downward across the knees and flexion of the spine be obtained by pressing down the shoulders and buttocks. In adults it is safe to puncture between the second and third lumbar vertebræ, but in small children the tapping should be made in the lumbosacral space. Whatever the position decided upon, the essential point is to secure the greatest possible degree of ventral flexion of the spine. Anesthesia is in most cases unnecessary. The strictest asepsis should be exercised. The location of the different vertebræ can be determined in most cases without much difficulty, but where there is doubt a line drawn between the highest points of the iliac crest passes through the fourth lumbar vertebra. An antitoxin needle an inch and three-quarters to two inches long does well in children, but for adults it

should be somewhat longer and of a strength that will permit of its easily penetrating. The needle may be introduced without being attached to the syringe, but if it is fastened to the latter, the direction of the needle is more easily controlled. After the space through which the puncture is to be made has been selected, the needle is introduced opposite the upper edge of the lower spinous process and two or three millimeters from the median line. The needle is directed very slightly upward and toward the median line. In children the fluid is reached at a depth of from two to three centimeters, and in adults at a depth of from four to seven centimeters. The amount of fluid removed depends upon the purposes for which the puncture is made; for diagnostic purposes, ten or fifteen cubic centimeters is ample; if for therapeutic purposes, several times this quantity may be removed. In such cases the condition of the patient should be a guide. The flow should be stopped at once upon the appearance of headache or a change in the character of the pulse. The accidents from lumbar puncture are unimportant. It rarely happens that there is difficulty in entering the spinal canal. Occasionally no fluid will be obtained owing to an inflammatory condition of the subarachnoid space. Collapse of the patient from the withdrawal of the fluid is always greater in cases of uremia or cases of brain tumor, in which the brain has been subject to considerable pressure for some time.

The Hot Bath as an Aid in Abdominal Diagnosis.—

George Dock, in the *Western Medical Review* of May 5, 1900, says it is not necessary to emphasize the importance of abdominal examination in general. Notwithstanding that the patient may be in a favorable position, it may not be possible to sufficiently relax the abdominal wall, rendered unusually irritable by inflammation; or, where the wall itself is unusually thick, a satisfactory examination is impossible. Sometimes for diagnostic purposes, after external examination, an anesthetic is given, but the same results are often reached by immersing the patient in a hot bath. Lennhof and Berkham advocated this method in Germany, but on the whole references to its employment are very scanty in the literature. In some of the cases, with the aid of the hot bath, sufficient relaxation can be obtained to permit of freer examination, and at the same time the patient can aid the examiner, where necessary, by contracting the diaphragm, an advantage which is lost when the patient is anesthetized. In employing the hot bath in this way, the patient is placed in the tub with the water at a temperature of 100° F. Hot water is added until the temperature reaches 110° F. In many

cases this will give complete relaxation in five to ten minutes, and in others it may be necessary to raise the temperature of the water as high as 120° F. The amount of relaxation obtained by this means varies with different patients, but is always sufficient to enable one to make a much more satisfactory examination than would be possible without it. Two cases are detailed in which diagnosis was cleared up by immersion in a hot bath followed by palpation of the abdomen. In one case the patient had exceedingly prominent recti muscles, the different divisions of which bore a striking resemblance to tumors. A diagnosis of sarcoma of the kidney was made by one surgeon, and tumor of the spleen by another; the condition was readily referred to simple hypertrophy of the muscle by the identification of these organs in normal position and size, when the patient was relaxed in the bath. Another was a case of appendicitis in which this structure was found to be palpable when in the bath, and a diagnosis of appendicitis was made in the absence of constitutional or local symptoms pointing to such a disease. Operation proved the correctness of the diagnosis.

The Causation of Nervous Symptoms in Typhoid Fever.—

A. G. R. Foulerton and H. C. Thomson, in *The Lancet* of April 21, 1900, say that the nervous symptoms in typhoid fever may be produced either by direct action of the bacillus, or its toxins on the nerve cells. They describe a number of clinical cases in which the nervous system was early involved in this disease, and attempt by experiments upon animals to ascertain what, if any, direct action the typhoid toxins have upon the nerve cells. The only experimental work along this line is the paper of Nichols, whose work was published in the *Journal of Experimental Medicine*, No. 2, 1899. Nichols found that the inoculation of rabbits with the living cultures of the bacillus typhosus was followed by marked changes in the ganglion cells of the cord and in the dorsal root-ganglia, when stained by Nissl's process. The writers have not been able to confirm these results, either after an artificial typhoid toxemia or an actual bacillary infection. Their observations, both in human disease and in experimental infection of animals, do not warrant the conclusion that toxin causes in the ganglion cells of the central nervous system changes of such a nature that constant and definite structural alterations can be demonstrated by Nissl's method of staining. It does not follow from this, however, that certain nervous symptoms are not produced by the pure toxin, for the action of these may be of a biochemical nature unaccompanied by any histo-

logical changes; or it may be that the toxin acts upon some part of the neuron other than the cell body. They have not at present completed any detailed examination of the peripheral nerves in this disease, but from the comparative infrequency of symptoms of neuritis it appears that this change, when it does occur, is not usually due to the uncomplicated action of the typhoid toxin.

How is Plague Spread?—

Walter Wyman, in the *Public Health Reports* for March, 1900, answers certain questions put to him by the Louisiana State Board of Health. He says:

1. As far as known, rats do not carry the plague without being affected by it.

2. It is possible that a germ may be in the fur of the rat and the animal not be sick with the disease. It is probable that the rat would soon infect itself from this source, because of its habit of dressing its fur.

3. Viability of the plague bacillus outside of the body is a disputed question.

4. The German Plague Commission states that the organism will die out in four days. Experiments in the hygienic laboratory of this service show that the bacillus of plague lived at the end of twenty-one days on a piece of fabric, dried and kept in a cool dark place.

5. According to the work of Batzuroff, rats are infected when the bacillus is conveyed by plague cultures, but it is not likely that the organism lives in the intestinal canal of a healthy rat.

6. It is not positively known that fleas infected with plague may live on a healthy rat without infecting it. In the Marine Hospital Hygienic Laboratory fleas from plague-sick guinea-pigs were found to carry the bacillus in virulent form.

The Symptoms of the Plague.—

J. G. Adami, in the *Montreal Medical Journal* for April, 1900, in an article which he entitles a prospect and a retrospect, gives the following varieties of plague, as distinguished by Cantlie:

(1) The bubonic form. As a rule the first outbreak of plague in a community is bubonic in type, whatever it may become afterward. (2) Pneumonic. (3) Intestinal, in which an intestinal flux occurs consisting of diarrhea at the onset, to be followed later by the appearance of blood, mucus, and epithelium in the stools. (4) The cerebral, in which delirium, often of a suicidal type, sets in

early, with twitchings, tonic and clonic spasms, especially in children; loss of consciousness and deafness are not infrequent. (5) Puerperal, in which uterine hemorrhage and miscarriage are the prominent features. (6) Pestis siderans, rapidly fatal cases in which the usual clinical signs have no time to develop. (7) Typhus type, resembling malignant typhus; in the tropics not infrequently the symptoms of the two diseases are almost identical, even to the skin eruption. (8) Pestis ambulans, a mild type of the disease, frequently included under the heading of (9) Pestis minor, sporadic or even epidemic outbreaks of adenitis going on to suppuration, with, however, little constitutional disturbance.

Formaldehyde as a Killing and Fixing Agent.—

T. P. Carter, in the *American Monthly Microscopical Journal* for April, 1900, says that formaldehyde as a preservative has come into wide-spread use, but as a killing and fixing agent for histological purposes its use is much more limited than it is destined to be. The formula which yields the most satisfactory results for all tissues is:

Formaldehyde, 40-per-cent solution	50 parts.
Distilled water	50 parts.
Acetic acid	5 parts.

Such a solution kills and fixes tissues very quickly, and at the same time does not shrink the cells. The solution in the strength recommended produces no ill effect upon any tissues, with the single exception of the spinal cord, where the axis cylinders seem to be diminished, but the cells of the gray matter are left in perfect condition. Tissues should be left in this solution for from six to twelve hours, after which they are removed to 50-per-cent alcohol for about an hour, and then for fifteen to thirty minutes they are placed in 75-per-cent alcohol, and the same length of time in 90-per-cent, after which the usual mounting methods are employed. A distinct advantage is that any staining solution may be employed with this fixing agent.

Le Nanisme Mitral.—

F. Rathery, in *La Presse Médicale* of May 9, 1900, describes under the title "Nanisme Mitral" a symptom-complex associated with mitral regurgitation, in which the ordinary signs of this cardiac lesion are strikingly absent; that is, there is none of the breathlessness, hepatic congestion, and edema of the lower extremities commonly associated with the disorder, but there is general debility, and three of the patients whom he described were remarkably low of

stature. This he considers as one of the striking symptoms of this condition. One patient had a height of 1 m. 42, another 1 m. 50, and another 1 m. 40. The body weight was in proportion to the height, or even less. There was a marked want of development, and chlorotic anemia was present more or less. The type of the disease varies in different cases; in some the cardiac arrhythmia is more pronounced, while in others the chlorosis and hysterical symptoms are most pronounced. The blood in all three cases was nearly the same, being about 3,300,000 red corpuscles and 8000 white. Hemoglobin was always below normal. A striking peculiarity in the history of all these cases was the difference in height of the patients from the height of the family, they invariably being much shorter.

The Relation of the Sexual Function to Insanity and Crime.—

H. M. Jones, in the *Annals of Gynecology and Pediatry* for March, 1900, has an exceedingly interesting study of the gynecological relations of nervous diseases and crime. He says that the correlation of insanity and disordered sexual function arising from disease of the generative organs is a factor to be taken into serious consideration in the treatment of women mentally afflicted. There is room for the belief that abnormal conditions of the uterus or adnexa may produce or aggravate a mental affection. In the investigation of criminal acts committed by women, if they occur during the menopause, or while the menstrual function is either active or suppressed, due weight should be given to this fact in estimating the mental state of the accused. The climacteric period is especially dangerous, and is characterized by moroseness and depression of spirits, with attacks of hysteria. There are occasionally hallucinations of sight and hearing and especially of smell, and generally a suspicional state. Such cases call for a thorough examination of the pelvic organs. In operations on the female generative organs there is a greater predisposition to mental disturbance than after other operative procedures.

Examination of Sputum for Tubercle Bacillus.—

E. W. Hammond (*Montreal Medical Journal*, March, 1900) recommends the following method of treating the sputum and making examination for the tubercle bacillus. Ten to twenty cubic centimeters of the sputum is added to 100 cubic centimeters of a five-per-cent solution of carbolic acid. This is placed in a small flask and shaken vigorously, and then poured into a urine glass and allowed to stand from twelve to twenty-four hours. After decantation, a little of this sputum is removed from the extreme depth of

the glass and rubbed between the two cover-glasses. The films so made are to be dried in the usual manner, and then washed in a mixture of alcohol for from one to three minutes; after having been dried between filter-paper and passed again through the flame, they are to be stained with carbolfuchsin in the usual manner. Where the sputum is watery, pure carbolic acid may be substituted for the five-per-cent solution.

The above is the method recommended by Kanthack and Drysdale. The writer says that it is not necessary to wait twenty-four hours, as the bacilli settle very readily and can easily be obtained with the pipette at the end of an hour. Alcohol and ether are by no means necessary, but after being fixed in the usual manner the specimen can be stained at once. He claims for the method that not only is the sputum disinfected, but the carbolic acid solution is much cleaner and pleasanter to work with than caustic potash, and it also aids in the subsequent staining by means of the carbolfuchsin.

The Cause of Progressive Paralysis.—

R. v. Krafft-Ebing, in the *American Journal of Insanity* for April, 1900, has an exhaustive study on the causes of paretic dementia. He lays great stress upon the conditions which surround civilized man at the close of the nineteenth century. He finds in this a constant struggle to adapt the individual organism to the environments. This effort at adaptation is attended with a strain which shows itself in occasional breaking down of the nervous system. He characterizes this as the "nervous" age. A careful study of recent statistics leads him to think that paretic dementia is increasing, and that it occurs at an earlier age than formerly. He enters into an exhaustive discussion of the relation of syphilis to this disease, and comes to the conclusion that the latter is one of the most important factors, if not the essential one, in the production of the disease. He does not say that every case of paretic dementia has been preceded by syphilis, but does say that the statistics point strongly to such a conclusion. Such a view does not exclude other factors, such as excesses, worry, overwork, and psychical trauma, which are important exciting causes in those who have been previously syphilized.

Bichloride Baths in the Treatment of Variola.—

H. A. Ingalls (*Journal of the American Medical Association*, April 28, 1900) has treated thirty-six cases of variola, of which one was hemorrhagic and thirteen confluent, without mortality, by means of

these baths. The first case was seen in the papulovesicular stage, of confluent type. It was noted that the pustulation and pitting were much less than might have been expected in so severe a case. The baths were comforting, and there was but a trace of the peculiar odor of the disease. The method of giving the baths was to take a six-foot tub which was filled with fairly warm solution of the bichloride, 1-to-10,000. The temperature ranged from 103° to 105° F. The patient was placed in the tub and rubbed with a soft cloth, the bath lasting from ten to twelve minutes. After removal from the bath the patients commonly expressed much relief, but shortly after, owing to the drying off, complained of a burning sensation, which led to a routine practice of anointing the patients after a bath with a mixture of subnitrate of bismuth, carbolic acid, and olive oil.

Backache as a Symptom of Rectal Disorder.—

E. H. Freeland, in *The Lancet* of April 21, 1900, says that the term backache used in a general sense would naturally include every ache and pain referred to the posterior surface of the trunk. In a narrower sense it is applied to the pains which occur at, or below, the level of the loin. For the purpose of his paper he restricts it to the posterior surface of the sacrum. The importance and significance of this symptom is often overlooked. It is common to associate backache and uterine disorder, and it is true that they are frequently associated, but we must be on our guard in assuming that they always stand in the relation of cause and effect. He gives a number of clinical cases, and comes to the conclusion that backache is not only a common but very important symptom. Whether it be practically the only symptom present, or whether it be associated with other more or less definite symptoms, it is worthy of a careful and searching investigation. No investigation into this symptom should be considered complete until the condition of the rectum has been ascertained.

The Malignant Edema.—

Alois Brabec, in the *Wiener Klinische Wochenschrift* of March 4, 1900, concludes a lengthy article on this subject with the following definition: The disease is characterized by an edema without the formation of gas or pus, the fluid in the tissues being derived directly from the blood. Malignant edema is characterized by the steady progress of the affection and is not dependent upon changes in the blood or lymphatics, but is a process which extends itself in the cellular tissues. In the beginning the disease is local, but as it

advances it involves the greater part of the subcutaneous tissues. There is no fever, nor enlargement of the spleen, nor albumin in the urine. This is the typical clinical picture, but it is sometimes changed when we have a mixed infection, or when the edema localizes itself in structures in which the swelling is locally dangerous, such as the throat.

Invasion Through the Tonsils.—

Frederick A. Packard, in the *Philadelphia Medical Journal* of April 28, 1900, discusses the relation of acute articular rheumatism to the tonsil. He sums up his argument by the statement that the tonsils are active and useful organs which offer a barrier to entrance of organisms in the deeper tissues, at a point especially open to infection. They act the same as other lymphadenoid tissues, and in this respect are strikingly like the lymphatic glands. During the course of or following tonsillitis, there is frequently an attack of acute articular rheumatism. The latter is believed to be an infectious disease which may be dependent upon more than a single organism. The phenomena of rheumatism can be accounted for by toxic invasion.

SURGERY.

Fracture of the Femur.—

In the May 15 issue of the *Therapeutic Gazette* is a symposium upon fracture of the femur. T. G. Morton says from 1864 to 1900 there were 1459 cases of simple fracture of the femur treated in the Pennsylvania Hospital; 1403 left the hospital cured and fifty-six died. Twenty-one of the deaths were within nine days of admission.

He calls attention to the fact that bilateral symmetry of the extremities is the exception. Differences as great as one-half inch in the legs are common in people who have never sustained fractures. It therefore depends upon whether the longer or the shorter leg is fractured, whether there shall be any inequality after union of the fracture. The measure of one limb gives no certain knowledge of what the length of the other should be, or what length the injured one was before the fracture. He calls attention to the difficulty in measuring the legs with the ordinary tape measure, and emphasizes the fact that the best means of estimating inequality in the lower extremities is to have the patient stand erect and place

something under the shorter leg until the spine is exactly erect and both sides of the body are at right angles to the vertical.

The method of treatment is substantially the same as that introduced by Professor Wallace in 1843; the treatment with splints or even movable plaster dressings is not employed, as they interfere with the inspection of the limb. The so-called ambulatory treatment has not been tried in the Pennsylvania Hospital. In not a single case in Morton's recollection has it been found necessary to wire the fragments, use a screw or plate, or to operate in any manner to secure union.

O. H. Allis says that in any fracture of the upper third of the shaft of the femur there are frequent unavoidable deformities. He has seen almost rectangular union in two cases within one year, coming from hospitals whose skilful treatment could not be called in question. In those cases where a good result follows, the deformity being readily reduced by extension, he thinks that the periosteal coverings, the dense fascia and ligaments about the upper portion of the thigh, have not been torn. When their integrity is lost, there is practically no envelope at the seat of fracture. In fractures of the upper third of the femur, extension can only influence the upper fragment through the attached soft parts. When these are freely torn, extension may actually alter the direction of the upper fragment and increase the deformity. In the writer's judgment the treatment with external appliances should first be attempted, and if at the end of a week there is a persistent deformity, the external treatment should be abandoned and the fracture treated by the open method.

G. G. Davis discusses the operative treatment of fractures. If operation is to be undertaken it should be done early—say in a day or two; this will usually suffice to show what can be done by conservative measures. Operation is advised only in oblique fracture, or where the fragments are caught in the tissues so as to prevent approximation; also when a free splinter of bone prevents fragments being brought together. In fractures at the extreme lower end of the femur, where the parts cannot be readily reduced, wiring is generally necessary. Fractures of the upper third below the trochanter are best treated by operation. Ununited fractures can be treated only by operation. In this way union of intracapsular fractures can be secured.

Edward Martin discusses the ultimate results of fracture of the femur. He says a person who has sustained a fracture of any of the larger bones and is discharged from hospital at the end of from thirty to fifty days as cured is but at the beginning of his troubles.

In the majority of cases he is completely crippled, so far as the regular pursuit of his vocation is concerned. His own efforts sometimes lead to recovery, and the record of the after-results is not found in surgical literature. He gives a record of 100 cases, with a table which describes the age of the patient, the location of fracture, the time in bed, the use of crutches or cane, the result as to total and partial and permanent disability, with the amount of shortening and complications.

In children, in about one-third of the cases there will be no shortening; in about one-half a shortening of about one centimeter, and the remainder will have between one and two centimeters. The average period of treatment in bed, and with crutches, splints, and bandages, is about five months. The average treatment for adults is eight months. An ultimate shortening of less than two centimeters in the adult is the exception, and in men past 21 will not occur in more than one case out of ten. A shortening of from two to four centimeters is so common that it is not even suggestive of carelessness or improper treatment. Weakness and swelling of the leg, with severe pain, are very common after fracture of the thigh, and cause more or less permanent disability in four-fifths of laboring men. The amount of disability largely depends upon the age of the patient, comparatively few of those above 40 regaining full strength and activity. There is a marked difference between the deformity measured upon leaving the hospital and that taken several years afterward.

Surgery and Surgical Operations in the Tropics.—

James Cantlie, in an article on "Surgery and Surgical Operations in the Tropics" (International Text-book of Surgery, 1900), says that the practitioner in the tropics is of necessity a surgeon. In this region there are no consultants within reach, and transportation is so limited that the patient cannot obtain the services of a specialist. The native of the tropics rarely consults the medical man in internal diseases, but it is almost always for surgical troubles, the latter appealing more directly to his senses.

The author says diseases of the equatorial belt show well defined characteristics unknown elsewhere. The tropics include roughly all the region within twelve degrees north and south of the equator, and are marked by a wonderful uniformity of temperature by day and night throughout the year. The greatest heat rarely exceeds 90° and rarely falls below 74°; the maximum may be taken at 95° and the minimum at 68°; the usual daily range is only 11°. This

remarkable uniformity is brought about by several causes: First, the days and nights being nearly equal in length throughout the year, there is no excess of night to cool the soil by radiation. The soil is thereby maintained at a high equable temperature throughout the year, and at a depth of five feet the annual mean temperature of 80° F. for the most part holds good. The aqueous vapor in the atmosphere helps to maintain the high temperature; although the humidity is not greater than in England, the actual quantity averages about five times as much. The uniform high temperature is maintained by the large amount of heat liberated during the condensation of aqueous vapor in the form of rain and dew. The rainfall is excessive, averaging about eighty inches. The whole belt is practically a forest girdle around the earth, and it is a region of almost perpetual calm. In the equatorial region we have conditions requisite for the natural cultivation of disease-bearing germs, and the effect upon aseptic surgery is baneful and direct. To sum up the conditions, the climate in this region of the globe is marked by an almost complete absence of climatic contrasts; air, soil, and water have a uniform temperature bordering on 80° F. The day and night temperatures vary but a few degrees, and there is complete absence of season.

In speaking of the different kinds of surgery met with in the tropics, the writer says that street accidents are reduced to a minimum. In China, where vehicular traffic is almost unknown, this kind of accident is almost never met with. Factories are rare, and mining pursuits few and far between. Railroads are conspicuous by their absence; therefore it comes about that injuries that obtain in other countries due to modern machinery are well-nigh removed. Tubercular diseases in children are much less frequently met with than in northern latitudes. The majority of cases presenting themselves for operation are in the nature of tumors, vesical calculi, deformities, such as harelip and cleft palate, scrotal tumors of the nature of elephantiasis, eye affections, and ovarian diseases. Hernia is rare in China, but in India it is met with quite frequently. In the course of nine years, during which the writer was attached to a large Chinese hospital, only one case of strangulated hernia came under his care. The natives, owing to their reluctance to consult a foreign doctor, frequently do not obtain medical treatment until their ailments are far beyond surgical relief. Malignant tumors are rarely seen in their early stages. In part, this is due to the dread which the natives have of submitting themselves to cutting operations.

Trained anesthetists are, of course, not available in the tropics, and frequently the surgeon himself must begin the operation by giving the anesthetic, and after the patient is thoroughly under its influence it must be continued by a bystander. Notwithstanding these unfavorable conditions, he thinks the mortality from chloroform narcosis is much less in the tropics than in the temperate regions. The effect of opium smoking, practiced so universally in some tropical countries, is not deleterious. It is stated that the average user of opium, with sound viscera, has as many chances of recovery as those not addicted to the drug. The residents of the tropics are under the ban of malarial infection. In health, the apparent immunity of some dwellers is proverbial, but when any untoward condition arises reducing the power of resistance, the "fever" is almost certain to show itself. Surgical operation upon lepers may be undertaken with good success.

Causes and Treatment of Movable Kidney.—

C. M. Moullin delivered the Hunterian lecture February 28, 1900 (*Lancet*, May 5, 1900), choosing for his subject "Movable Kidney." As to the importance of the subject there is a wide diversity of opinion. Some practitioners regard movable kidney as only a clinical curiosity; others think it is a grave disability that causes much suffering and sometimes places the patient in serious danger. Post-mortem records show that it is an extremely rare affection, but this is due to the fact that the cooling of the body after death and the rigidity which occurs in all the tissues fix the kidney in its normal position, consequently the mobility of these organs is not apparent after death. The left kidney is entirely above a horizontal plane drawn across the thorax on a level with the lowest part of first rib, and the lower end of the right kidney is only a quarter of an inch below this line. In this position the kidney can be felt only in young subjects with yielding abdominal walls. The kidneys are not fixed organs, the amount of normal movement, according to Albarran, being from three to five centimeters. This normal movement makes it difficult to determine what is a movable kidney. A satisfactory test as to whether a kidney is movable is its failure to reascend on tranquil expiration. When the patient is standing upright and has forced the kidney as low down as he can by deep inspiration, if then the inferior extremity of the organ can be felt, it may be regarded as abnormally movable; in other words, the real test is as to whether the kidney maintains its normal relation to the movements of the diaphragm.

Movable kidney is due to the upright attitude, by which the relations of supports of the kidney are altered from what they are in animals going upon all fours. In addition, right-handedness causes the transverse portions of the lumbar vertebræ which lie under the floor of the right fossa to be pressed forward. These anatomical peculiarities place the kidneys in a very insecure position, and it is remarkable that the frequency of misplacement of these organs is not much greater. The condition is certainly hereditary, and is much more frequent in women than in men, and in women who have borne children more than in those who have not. It is twenty times more common upon the right side than it is upon the left. None of the other reasons which have been assigned for it, such as the weight of the liver or weight of the renal vessels, is sufficiently important to deserve consideration.

In the treatment of the affection general muscular development is to be encouraged, though too much must not be expected from this means, as displacement occurs in people with well developed muscular abdominal walls. Tight corsets and high heels should be discouraged. The mobility and the intensity of the symptoms are the factors which determine the necessity of treatment. In many cases an extreme mobility may be quite symptomless, while in others it is accompanied by severe distress. It is not wise to leave a freely movable kidney uncontrolled even when the symptoms are not marked. The ureter may become kinked and hydronephrosis result, or even worse things may happen. Calculus and tuberculosis are favored by mobility. The abdominal belt is useful in the milder cases; it presses the abdominal viscera together and so steadies the displaced organ, but it cannot press the kidney back into its place, nor, if the kidney has been reduced, can it retain it there when the patient stands upright. Pads, in connection with the belt, he believes to be utterly useless. In all cases with manifest deformity of the lumbar region, or in which there is real distress, he recommends nephrorrhaphy. He has never known of a case in which this operation, if properly carried out, failed to give relief, excepting where the disease had lasted so long that an indelible impression was produced upon the patient's nervous system.

Local Anesthesia in the Ear.—

A. A. Gray, in *The Lancet* of April 21, 1900, says that the use of cocaine in the production of local anesthesia in the ear has been somewhat disappointing. The aqueous solution seems to have no anesthetic influence upon the uninjured tympanic membrane. In

cases of perforation under its influence, the ossicles may sometimes be removed, but the pain is rarely annulled by the application. The use of cocaine in the form of pure dry powder gives a rather more efficient anesthesia for the removal of polypi and granulations. In acute inflammation of the middle ear, an incision of the drum membrane is to be made, either under a general anesthetic, or else the patient must bear the excruciating but brief pain attending the operation. Eucaine is subject to the same limitations in the ear as cocaine. This peculiarity of the tympanic membrane is due to the fact that nerve terminations are protected by tissues which are able to resist the penetration of water. To obtain a substance which would easily penetrate the membrane without doing harm has therefore been the subject of considerable experimental study.

A satisfactory mixture was eventually obtained. This was composed of equal parts of anilin oil and dilute alcohol, to which about five per cent of cocaine was added. This caused no pain when dropped in the ear, and an instillation of ten minims was followed by complete anesthesia of the drum membrane and meatus. In this condition a blunt probe could be pressed against the membrane and drawn across its surface without causing the slightest sensation, the subject being only able to hear the rubbing of the probe. An interesting effect which the anilin oil produced on the membrane was the peculiar transparency which it gave to the latter. In a healthy ear, the long process of the incus, the head of the stapes, and the round window were very faintly outlined before the solution was instilled. When the ear was examined after the instillation, these parts came out with great clearness. This fact is best brought out by using a solution containing a large proportion of anilin oil and a small proportion of spirit. The pure oil produces the effect very well, but it requires a long time. This clearing effect only occurs in membranes of normal thickness or less; membranes which have undergone thickening and condensation cannot be rendered transparent.

Drainage of Appendiceal Abscess into the Rectum.—

In the *Milwaukee Medical Journal* for April, 1900, is found a report by Reuben Peterson of an enormous appendiceal abscess incised through the rectum. The case was reported to the Chicago Gynecological Society. When first seen by Peterson the patient had been sick for a week with symptoms of appendicitis. His family physician had urged operation, but this would not be allowed by the patient, and the physician was compelled to watch an abscess gradually increase in size for about two weeks. At the end of that

time his pulse was 100 and temperature 99.5° F. The abdomen was quite filled with a fluctuating tumor reaching within one and one-half inches of the umbilicus, filling up the right side. It extended almost to the iliac crest on the left side, simulating an enormously distended bladder, except that the area of flatness was greater toward the flanks. A rectal examination showed that the pus had burrowed into the pelvis so as to dilate the anal sphincter. An opening was made through the rectum, and when the sac was incised the tension was so great that the pus was thrown out for a considerable distance. Over a gallon of fetid pus was discharged. The following day the temperature rose to 102° and the pulse to 120. There was free discharge from the rectum, and three nights after the operation a large quantity of pus was discharged spontaneously. On the sixth day the patient, contrary to the wishes of the medical attendant, left the hospital and walked home, a distance of one and one-half miles. From that time he made a rapid recovery, and soon returned to his employment.

Peterson contrasts the rapid convalescence in this case with the comparatively slow recovery in another, in which he opened an appendiceal abscess through the abdominal wall.

In the discussion, Byford said that it was no doubt better surgery to operate from above, or through the vagina or perineal body, in ordinary cases. However, the rectum is not more septic than the abscess. When drainage is good, abscesses discharging through the rectum almost always heal. He had by rectal incision opened pelvic abscesses, and by maintaining the opening had never failed to get good results.

Emil Ries was of the opinion that abscesses should not be opened through the rectum, whether they were appendiceal in origin or were connected with the uterine appendages. If recent, such abscesses might heal by a contraction of the abscess cavity and a closure of the opening into the rectum, but if they were at all chronic with much induration, there was danger of a fistulous opening being left into the rectum.

A Rational Technique in Circumcision.—

L. W. Bacon, Jr., in the *Archives of Pediatrics* for May, 1900, says that the various devices such as clamps, phimosis rings, tractors, which have been used to overcome the difficulties in this operation, are all of them unsatisfactory. They fail to secure a division of the mucous membrane sufficiently high up, and they are of little aid in suturing the integument and mucous membrane after

the amputation is made. He thinks that a much better result is secured if a surgeon abandons an effort to remove the redundant tissue at a single sweep of the knife. The rule should be in making the skin incision to have it follow the corona, but it must be always borne in mind that as the incision, which should begin at the top, goes downward, it should be brought forward toward the meatus. The skin should be cut further back on the dorsal surface than at the frenum. His first incision consists in slitting the prepuce over the dorsum as far back as the corona. This loosens the tissues, and after it is made the parts should be carefully cleansed and all adhesions broken up. The line of incision which is to encircle the tissue is to be previously marked upon the skin, and the median incision on the dorsum made backward to line. A stitch is then placed at the angle of the incision, which unites the skin and the mucous membrane. This skin is to be divided along the line which was marked on the surface; afterward the mucous membrane is divided along the same line, and finally the loose cellular tissue between these two structures. When the latter is severed the stitches are successively placed first upon one side and then upon the other. The sutures should be of very fine catgut, placed closely, and they should accurately attach the skin to the mucous membrane, allowing none of the loose cellular tissues to protrude between the sutures. He thinks if this is carefully done that edema and other untoward complications will not be so frequent. In tying the sutures the square knot should be used in preference to the surgeon's knot, as it is less bulky and will not prove irritating when the dressings are applied. The same procedure is followed upon each side, and after the sutures are all placed the narrow connecting tissue at the frenum is divided. This is, of course, well forward of the dorsal incision, and if the tissues are left sufficiently long at this point there will be no retraction. The reason for making the ventral incision last is that it contains the principal arteries severed in the operation, and this may require a ligature or the application of clamp forceps.

A New and Simple Method of Sterilizing Catgut.—

C. A. Elsburg, in the *Medical Record* of May 5, 1900, says the requisites for a good catgut are (1) sterility, (2) strength, (3) softness and pliability. In a series of investigations on the properties of catgut and other suture materials, the writer has applied chemical principles seldom described, but much used in chemistry, namely, that animal substances are not dissolved by solutions which pre-

cipitate the substances themselves. Thus, ammonium sulphate precipitates albumin, and therefore albumin is insolube in solutions of this chemical. It was discovered that ammonium sulphate, one of the most perfect precipitants for albumin, was a valuable chemical in the preparation of catgut. The fatty matter is removed from catgut by immersing the latter in alcohol or chloroform from twenty-four to forty-eight hours. A mixture of chloroform one part and ether two parts has great penetrating power. A stock of catgut from which the fat has been removed may be kept on hand in a dry state, the chloroform and ether having been allowed to evaporate and the catgut placed in a clean receptacle.

When the catgut is to be sterilized, it is wound in a single layer tightly upon glass spools of convenient size; these are then boiled from ten to thirty minutes in a hot saturated solution of ammonium sulphate in water. This solution is made by adding chemically pure ammonium sulphate to boiling water, until the latter is saturated. When the spools are removed from the boiling solution, some of the salt crystallizes upon them, which can at once be removed in water or carbolic solution. The catgut is then ready for use or for preservation in strong alcohol. Catgut prepared in this way will be found to have lost none of its physical properties. It is stronger when prepared in this way than when other methods are followed. It remains of the same thickness as the raw material, does not swell, and is readily absorbed by the tissues of the body, disappearing from the fourth to the eighth day. Bacteriological experiments have shown conclusively that catgut prepared by this method is always sterile after five minutes' boiling. Instead of plain water, the ammonium sulphate can be dissolved in a two-per-cent solution of carbolic acid, which increases the sterilizing properties of the solution. It takes five minutes to dissolve when the plain water is used, and only two when the antiseptic is added. The catgut can be sterilized any number of times by boiling in the solution for from five to fifteen minutes. The advantages claimed by the writer are perfect sterilization, cheapness, and availability for general use.

Galvanic Cautery in the Nose.—

Beaman Douglas, in the *New York Medical Journal* of May 12, 1900, says the immediate effect of electrocautery in the nose is very favorable, and the ease with which it is performed and its freedom from dangers have made it a well-nigh universal remedy in the treatment of some intranasal conditions. Of late it has fallen into disfavor with some. A practical point in his observations

shows that the cautery should not be used over a large surface, but should be rapidly introduced into the deeper structures, and immediately drawn forward or backward. The cautery should be cool, or be only heated sufficiently to allow it to pass the epithelial and hyaline membranes. After this the temperature of the point should be increased, destroying the deeper structures, vessels, glands, and hypertrophic tissues down to the bone. It follows from this that the old method of "linear" cauterization, which has been and still is recommended, should be done away with. In this way the tissue destroyed is wedge-shaped, the base corresponding to the epithelial surface and the apex to the periosteum. Such a method is applicable where it is desired to produce a superficial effect in stimulating the mucous membrane and in cauterizing an ulcer. In all other cases the cautery should be used in such a manner that the superficial tissues are altered as little as possible and the deeper hypertrophic tissues destroyed. This result is best attained by using a rather stiff wire electrode, which is made to penetrate beneath the hyaline membrane with only a moderate heat. The temperature is then increased, and the hypertrophic tissues beneath are destroyed. This necessitates the repeated introduction of the cautery point at different places along the hypertrophic membrane about one-fourth of an inch apart, and the use of a short point.

Double-sided Lenticonus Posterior.—

Frank Buller and W. G. N. Byers report in the *Montreal Medical Journal* for March, 1900, an example of this exceedingly rare eye affection. In a recent article Pergens was only able to gather fifteen cases from the literature. The affection occurs as a congenital or acquired condition and may affect one or both eyes In nearly every instance the convexity was confined to the posterior surface of the lens.

The case reported by the writers acquires additional interest from the fact that it was the first in which operative treatment was adopted and followed by complete restoration of vision. The patient was 60 years of age, and had suffered from gradual loss of vision during the past four years. Previous to that time her sight had been excellent. Two years before coming under observation she had consulted a local optician and procured a pair of strong minus lenses which helped her vision for a short time. When first examining the eyes with the ophthalmoscope, it gave the impression that there was a conical cornea, but this was dispelled by the use of the

ophthalmometer. By both the direct and indirect methods a more or less rounded opacity could be seen near the posterior pole of each lens, which was due more to the irregular refraction than to definite changes in the lens substance. R. V. without mydriatics, 6–60; L. V. 1–60, not improved by lenses. With the mydriatic and lenses, vision could be raised to 6–24 in the right eye. After a preliminary iridectomy the lens was extracted, it being freed from the capsule by the injection beneath it of a physiological salt solution, as recommended by McKeown. After the entrance of the saline solution there was no red reflex from the fundus, the lens having become totally opaque. A free incision having been made in the capsule, the lens was now expressed with ease. A month later the pupilary area was needled. With glasses vision was normal.

Cancer of the Breast.—

C. A. McWilliams, in the *Medical News* of April 28, 1900, gives the statistics of one hundred cases of cancer of the breast and the results of operation. We append the summary of the cases:

Trauma present in 44.6 per cent.
Married, 74 per cent.
Children born to 66.6 per cent.
Average number of children to each, 5.
Pain present in 56.2 per cent.
Nipple retracted in 45.2 per cent.
Right breast involved in 51 cases.
Left breast involved in 49 cases.
Axillary glands palpable in 48.9 per cent.
Axillary glands found cancerous by microscope, 78.6 per cent.
Average age was 49 years, 6 months, and 26 days.
Mortality of operation was four per cent.
Average length of time in hospital, twenty days.
Prolongation of life for one year, 59 per cent.
Prolongation of life for two years, 36 per cent.
Cured (no recurrence at the end of three years), 34 per cent.
Recurrence took place in one year in 21 cases.
Recurrence took place in two years in 28 cases.
Recurrence took place locally in 15 cases.
Recurrence took place in the lung in 6 cases.

Average length of time in recurrent cases from operation to death, one year, two months, and twenty days.

Average length of time from period of recurrence to death, five months.

Examination and Treatment of Ulceration of the Abdominal Rectum and Sigmoid.—

S. B. Taylor, in the *Columbus Medical Journal* for April, 1900, has an article in which there is some comparison of old and modern methods of examination and treatment of the upper rectum. A number of cases are given which clearly illustrate the imperfectness of examination with the finger. The author points out that it is impossible to reach the upper rectum and the sigmoid unless the whole hand is introduced. Even in these instances there are many conditions that will escape recognition. The newer methods of examination in Martin's position, in which the rectum and sigmoid balloon by atmospheric pressure, are but an application to the rectum of Sims's posture in distending the vagina.

Sigmoidal and rectal ulceration is accompanied by aching in the sacral region and over the iliac fossa, aching down the thighs, difficulty in defecation, an alternating diarrhea and constipation. In these cases small pieces of mucous membrane may be found clinging about the fecal cylinder, and the discharged membrane is sometimes tinged with blood. The general symptoms are a loss of flesh accompanied by pallor, and usually more or less disturbance of the nervous system. In this class of cases the posture for examination is of the utmost importance in arriving at a diagnosis. Ballooning of the rectum takes place in the majority of cases; in only about one in eighty is the examination interfered with by a failure of the upper rectum to distend with air. In this position it is possible, with the entire field under the eye, to cleanse ulcers, apply local remedies, and curette or cauterize, according to the indications in the particular case.

When Shall We Operate for Appendicitis?—

Joseph Wiener, Jr., in the *Medical Record* of May 19, 1900, has a judicial paper upon the vexed question of operation in appendicitis. He does not express an unbounded confidence in statistics. The term early operation is a relative one, and no definite rules can be formulated as to how much time should elapse before operation. A general peritonitis may supervene on the second or third day. Every case must be decided on its merits. In determining operation, the local symptoms are of more importance than the constitutional. In the presence of marked local signs we should operate, even if the constitutional symptoms are slight. With mild local symptoms operation should not be quickly undertaken.

He summarizes the indications for operation as follows: (1) Not every case of appendicitis should be operated on; (2) after a first

mild attack, try regulation of diet and salines; (3) after a first severe attack, remove the appendix; (4) after two or more, even mild, attacks, operate; (5) in an acute attack do not give opium or morphine; (6) operate during an attack if a chill manifests itself, if the pain is severe enough to require morphine, if the pulse is very small or rapid, or irregular, if there is persistent vomiting, if there is persistent rigidity of the abdominal wall, if an abscess can be felt, if the general condition makes it imperative, or if in doubt.

The Wounds Produced by the Mauser Bullet.—

William MacCormac, in *The Lancet* of March 24, 1900, gives a number of histories of interesting cases that have been observed at the hospitals near the front in South Africa. Many of these cases are remarkable, especially where wounds have been caused by the Mauser bullet. The wound of entrance was small, circular, covered with a black scab, and about one-fourth inch in diameter. The wound of exit was often quite small, but a little larger than the entrance wound, sometimes presenting a scar like an incised wound, and frequently quite hard to discover. When seen a week or ten days subsequent to the injury they were, for the most part, healed. He says that it is something marvelous how these bullets fail to damage vital structures lying immediately in their path. The proportion of fatal chest wounds to those that recover is small. One lung and even both are traversed without causing grave symptoms, and often without producing any signs of lung injury. A very large number of perforating abdominal wounds are recovered from without operation, and the indications for interference in these cases must be completely revised. Wounds of the knee-joint are recovered from with a facility with which we have had no previous experience, and the same is true with the wounds of other joints.

Vesicorectal Anastomosis.—

Jacob Frank, in the *Journal of the American Medical Association* of May 12 and 19, 1900, has an experimental study of vesicorectal anastomosis, in which he claims that his work shows that the ureter may be safely transplanted into the rectum, and that there is no danger of infection extending from the rectum to the kidney. He claims further that there is no danger of ureteral constriction at the point of implantation.

His conclusions are directly at variance with those of Reuben Peterson, who has made a most extended experimental study of this question and comes to the conclusion that direct implantation of the

ureters into the rectum is not a justifiable operation. All of his dogs in which this operation was performed sooner or later developed an infection of the kidneys, to which they succumbed. If the ureteral openings into the bladder were transplanted into the rectum, infection of the kidneys did not occur, hence he regards the operation devised by Maydl as the only one which is proper to perform upon human beings.

In an article in the *American Gynecological and Obstetrical Journal* for May, 1900, Franklin H. Martin studies the question as to whether the removal of the bladder may not be a justifiable operation in certain cases of malignant disease. He says the principal objection to making the lower bowel a substitute for the bladder is the supposition that nephritis, as the result of ascending ureteritis, will invariably occur after ureterorectal anastomosis. This supposition is based on the assumption of an inherent inability of the ureters to resist the septic bacteria always found in the intestines, on the death of three cases from nephritis in which the operation was performed, and on the result of innumerable experiments upon animals, which almost without exception showed destructive infection of the kidney. He says that the questions will only be decided by actual experience in the human. There are now actually on record forty-eight patients with vesicorectal and ureterorectal transplantation living, and a large percentage are well at a period varying from a few months to 24½ years.

The After-history of Gastrectomy.—

G. E. Armstrong (*Montreal Medical Journal*, April, 1900) has collected five cases of successful complete gastrectomy since the report of the first case by Schlatter, March 18, 1899: (1) A woman aged 36, who died fourteen months after operation; (2) a woman aged 66, alive and well two years after operation; (3) a woman aged 53, who died nine months after operation; (4) a woman aged 38, alive and well seventeen months after operation; (5) a woman aged 46, alive and well ten months after operation.

These cases show that the stomach, though a convenience, is not an absolute necessity, and can be removed in its entirety without causing any interference in nutrition. In suitable cases the operation is justifiable, as it relieves suffering and offers a reasonable expectation of prolonging life for many months. To avail, the operation must be performed at the earliest moment, before patients have become greatly reduced and before the disease has involved surrounding structures.

THERAPEUTICS.

The Effect of Alcohol on the Human Brain.—

Victor Horsley delivered the Lees and Raper memorial lecture at St. James's Hall, April 22, 1900 (*Lancet*, May 5, 1900), choosing the above subject. He said it was his duty to present the actual state of scientific knowledge on the total abstinence question, without any emotional feeling, however much one might be moved by the tragedies brought about by alcohol. Care must be taken to prevent warping of the scientific judgment by extraneous conditions. The effect of alcohol upon the brain is most easily studied by estimating the time reaction, a method which had been followed by Kraepelin with great accuracy. This observer found that after the ingestion of a small quantity of alcohol the reaction time was shortened, but in the course of a few minutes there was a slowing, which became more marked and endured as long as the alcohol was in active operation in the body. This quickening effect of the alcohol, which was only temporary, was only noted in the so-called simple reactions, those requiring but a single movement in response to a definite stimulus. Where the reaction was complex, involving an association of ideas, it was never quickened by the alcohol, even when the latter was in small quantity. In his personal investigation Kraepelin found that a small quantity of alcohol had an *apparently* exhilarating effect on the activity of the mind, and that he performed the operation of adding and subtracting figures and learning figures more quickly. When, however, he came to actually measure on the recording drum the exact period of time, he found to his astonishment that he had accomplished these mental operations in a worse fashion than without alcohol. The alcohol had a primary deceptive effect on the mind of the observer. In regard to muscular work under the influence of alcohol, it was found by the dynamometer that there was a slight increase in the effect of muscular contraction, but this was very soon followed by a lowering or depressing effect. The slight stimulation of muscular power was difficult of explanation, but it might be assumed that all such acts were normally under a certain inhibition, which was removed by the alcohol. It was the same temporary increase which is noted in the racing of an engine when the governor is removed.

Poisoning of the nerve centers by alcohol is a chemical matter. Under the influence of alcohol, granular masses in the Purkinge cells disappeared and their protoplasm lost the characteristic structure. The dendrities exhibited swellings and shrinkings. In the

brains of alcoholic persons there was wide-spread pigmentation of the nerve cells.

Mr. Horsley concluded by stating that he thinks from a scientific standpoint the contention that small doses of alcohol at frequent intervals are harmless could not be maintained; therefore, total abstinence is, from a scientific standpoint, the only tenable position.

Systematic Treatment of the Consumptive Poor.—

J. F. Russell, in the *New York Medical Journal* of May 5, 1900, says when a patient has had a cough for some months which is followed by a hemorrhage, and he presents himself at a dispensary and a diagnosis of consumption is made, he is generally advised to seek another climate. If not able to do this, he is probably presented with a bottle of cod-liver oil and one of creosote, which he is told to take at regular intervals. To meet some of the deficiencies in the dispensary treatment of consumptive patients, a special effort was made in the Post-Graduate Hospital upon a series of selected patients. These were ten in number, in only one of whom there was a well marked relapse. All the cases were regularly cared for at the dispensary, and they continued at their regular employment. These patients were formed into a special class and were required to report at the dispensary every morning and every evening, when they received a proportion of digested mixed foods, the hours being especially arranged for those who labored. The only requirements exacted of the patients were that they should have sufficient time to obtain their meals regularly at home. The cases were all in the incipient stages and were carefully examined by a special committee of the dispensary staff.

When the applicants were accepted they were told that they had consumption, that the treatment lasted for many months, and that the hope of recovery rested with them, in carefully carrying out all the instructions, which included a report twice a day at the dispensary; that they must eat regularly, the diet being largely guided by the physician. Tea and coffee was allowed but once a day, and all alcoholics were forbidden. They must keep their feet warm and dry. Corsets were forbidden. They must sleep with windows wide open in all weather, keep in the open air, avoiding overexertion or exercise as much as possible. They must not go to places of amusement or keep late hours. A satisfactory movement of the bowels should be secured each day, and no medicine was given except cathartics. In addition, each patient was given a set of instructions, with the injunction that they were to be carefully read and observed. These related to the causes of consumption, the necessity of care in

the disposal of sputum, etc. The result of this treatment was very successful, and from it the writer draws the conclusion that dispensary treatment is practicable, and comparatively inexpensive. Pulmonary tuberculosis can only be cured in its earliest stage by dispensary treatment.

The Treatment of Pernicious Anemia.—

Albert Abrams, in the *Medical Record* of April 28, 1900, says that arsenic is a true specific in pernicious anemia, and every case of grave anemia should receive this treatment on the theory that it may possibly belong to the pernicious variety. Like other specific treatment, it produces relative cures and cannot be regarded as a prophylactic, owing to the frequent relapses which occur. It may be given in the form of Fowler's solution, beginning with three-minim doses, well diluted, after each meal. It is increased one or two minims daily, according to the urgency of the case, until twenty-five or thirty minims is taken three times a day. A safer rule is to use it to the point of toleration and maintain it there until the blood examination shows the desired changes. The appearance of toxic symptoms, such as edema, suffusion of the eyelids, gastro-intestinal inflammation, is a signal for the temporary discontinuance of the drug. If the arsenic is not tolerated by the stomach, it should be administered subcutaneously or by the rectum. In connection with the arsenic, assimilable food and rest are indispensable adjuvants. Iron is not useless, but is apt to create disturbance of digestion. Bone-marrow induces nausea and aggravates existing intestinal troubles. Lavage of the stomach is useful, and by it we are able to determine the capacity of the stomach for digestion and the character of food which should be given. To overcome the reduction in the quantity of blood, normal saline solution should be given in the colon or subcutaneously. Relapses are best prevented by minute attention to dietetic and hygienic details.

Holocaine in Eye Diseases.—

Edward Jackson, in the *American Therapist* for April, 1900, says that holocaine is superior to cocaine as an agent for producing local anesthesia for the performance of certain operations on the eye. This superiority is not generally appreciated, though it is four years since the drug was discovered. Cocaine produces contraction of the blood-vessels, decrease in tension of the eyeball, and a loss of elasticity. Holocaine, on the contrary, does not dilate the pupil, nor diminish tension, nor interfere with nutrition. Cocaine favors infection, while holocaine has a distinct bactericidal influence. The anesthesia produced by holocaine is quite equal to that of cocaine,

but it does not last as long as that produced by the latter drug. He thinks that holocaine should be invariably employed as the local anesthetic in the removal of a foreign body, because of its antiseptic powers, which protect the cornea from infection. Holocaine, thus far, has been used chiefly in the form of the hydrochlorate. This is soluble in distilled water at ordinary temperatures to the extent of a little over one per cent, which has been the solution generally employed to produce local anesthesia. It is readily precipitated by alkalies, which must be borne in mind when prescribing it with other remedies.

The Treatment of Pruritus by Heat.—

Edmund Andrews, in the *Clinical Review* for May, 1900, does not discuss the etiology of pruritus, but claims that heat, both dry and moist, is of great value in the treatment of all forms, whether accompanied by lesions of the skin or not. His attention was first directed to the method by a farmer who exposed his feet to as high a temperature as could be borne, to relieve the itching of chilblains. Each application was followed by prompt relief, and usually two or three were sufficient to cure the affection. He notes that there is a certain periodicity in all forms of pruritus. He recommends for anal pruritus the application of hot compresses changed every two minutes until the itching disappears. In scrotal pruritus the relief is obtained by the use of very hot applications, which can be evenly made by having the patient sit in a tub of water. According to Andrews, Napoleon was affected with an intolerable itching on the outer part of the thighs, which became especially severe, and which he thinks was associated with an eczema. This he treated himself by sitting in a bath several hours in the morning, when the itching was intolerable, the heat of the water being constantly increased by allowing hot water to run into the tub.

A Case of Pernicious Anemia Treated with Antistreptococcic Serum.—

William Elder, in *The Lancet* of April 28, 1900, describes a well marked case of pernicious anemia in which all of the clinical symptoms were present and an examination of the blood revealed the typical changes in the corpuscles. The count showed 797,500 red corpuscles, 4520 whites, and hemoglobin reduced to 24 per cent. Within a week after admission of the patient treatment was begun by subcutaneous injections of ten cubic centimeters of antistreptococcic serum. From February 3 to March 18 he received eighteen injections. An antiseptic mouth-wash was employed, and five grains of salol and fifteen grains of salicylate of bismuth was

given every eight hours internally. With this exception and an occasional hypnotic or cathartic, no specific treatment for the anemia was given—no arsenic, iron, or bone-marrow. On March 20 the red corpuscles had increased to 4,800,000 and the hemoglobin to 104 per cent. The writer recognizes that but little importance can be attached to the treatment of a single case, particularly in so uncertain a disease and when each is subject to such striking remissions and relapses as pernicious anemia; still, he thinks the results are suggestive and that the method deserves further trial.

Treatment of Typhoid Fever.—

H. C. Wood, in a letter to the editor of the *International Medical Magazine* for April, 1900, says the mortality-rate of typhoid fever, when cases are seen from the beginning, should not be over three per cent. This will be true if the correct principles of treatment are carried out. These are: Absolute rest in bed, from the moment the first suspicious symptom is recognized. No medicine should be given, unless distinctly called for by some symptom. Mineral acids, fever mixtures, and the whole mass of drugs are, in his opinion, not only unnecessary, but perhaps harmful, when administered in a routine manner. A proper remedy should be given boldly and in proper dose, when it is indicated to meet some symptom. Baths should be employed when the temperature reaches from 100° to 100½° or above. Turpentine should be given, commencing about the second week in every case. Laboratory and clinical experience shows that this drug has a specific local action on the typhoid bacillus contained in the typhoid ulcer. The patient should be carefully fed, not too much food being given. Semisolid meat foods may sometimes replace milk to advantage.

Ergot in the Treatment of Malarial Fevers.—

A. Jacobi, in the *Albany Medical Annals* for May, 1900, publishes a lengthy paper upon fevers and fever remedies in which he reiterates his confidence in the value of ergot in obstinate malarial fevers attended by enlargement of the spleen. He says there are cases of chronic intermittent fevers, with large tumefactions of the spleen, which, after having resisted the action of quinine, arsenic, methylene blue, and eucalyptus, are benefited by ergot. When enlargement of the spleen is not old and not firmly established, the contracting effect of ergot is noticed within a reasonable length of time, and the attacks disappear before the diminution in the size of the spleen is very marked. Though temperatures remain after the employment of the ergot, as a rule, chills are not noted. The plas-

modia do not disappear from the blood so rapidly as they do after quinine when the latter is effective. An experience extending over forty years, in which he has used ergot in many instances, justifies him in asserting that there are many cases of chronic malaria, apparently intractable, that get well with ergot. It is often desirable to combine the ergot with quinine or arsenic.

Iodophin a Substitute for Other Iodides.—

G. W. Frieser, in the *Wiener Klinische Rundschau* of April 22, 1900, says that the ordinary preparations of iodine are frequently accompanied by local and general disturbances. Long ago Winternitz pointed out that combinations of iodine with fats excluded these effects. Following along these lines, E. Merck has prepared a substance which he calls iodophin, which Frieser says may be employed in all cases calling for an iodine salt. Unlike the iodide of potassium, it causes no disturbance of the stomach and no constitutional reaction. It is exceedingly valuable in syphilitic affections, especially in the tertiary stage, and in his experience it has proved very valuable in the asthma of emphysema. It is absorbed by the intestines without difficulty and is eliminated slowly; consequently we have the effects of the iodides continued for a considerable time after the suspension of the remedy. The excellent results reached by him in the treatment of many affections calling for iodides with this new preparation he thinks entitles it to further study, which will show that it is a distiuct improvement on other iodine salts.

Treatment of Seasickness.—

Dutrenblay has an account in *La Presse Médicale* for April, 1900, of certain observations made by M. Dubois on the treatment of seasickness by inhalations of oxygen under pressure. The theory upon which the treatment is based is that seasickness is caused by incomplete ventilation of the lungs with an increase in residual air and imperfect respiratory changes. The contractions of the diaphragm, with a consequent displacement of the viscera, are the principal causes of the secondary phenomena, headache, vomiting, and chills. A number of cases treated show that under these circumstances the inhalation of gas is followed by rapid improvement, the vomiting ceases, and a feeling of well-being is experienced, followed by a calm sleep. The respirations become deep and regular, the pulse rises, and the headache disappears. The number of inhalations required for this purpose is not very large, the gas inhaled amounting to thirty or forty liters. Inhalations are usually made through the mouth.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

To Avoid Infection of the Bladder when Catheterizing Women.—

H. A. Kelly, in the *Johns Hopkins Hospital Bulletin* for April, 1900, says that the frequent untoward results which follow catheterization have led him to think that it should be placed among the major operations in gynecology. Whether the nurse or the physician should employ the catheter is almost invariably settled by the circumstances in favor of the former. The physician, as a rule, cannot add this to his various burdensome duties, and it must be looked upon as a part of the nurse's work. Every nurse should be warned of the risks and should be carefully taught the methods of avoiding infection in the use of the catheter. Since 1884 he has always employed a glass catheter. At that time he prepared one in an urgent case from the glass tube of a baby's feeding bottle. A glass tube can be easily sterilized, and the end which enters the bladder should not be touched. Each patient should have her own catheter, which should be kept for the exclusive use of that patient as long as it is needed. The sterilizing is accomplished by boiling in an acid solution, and after removing the catheter from the patient it is placed in a carbolic acid solution, or one of bichloride of mercury. Before using it may again be boiled in the acid solution. Before introducing the catheter the nurse carefully scrubs her hands, and the patient is placed in proper position to expose the urethral orifice. The urethral opening is then carefully cleansed with a pledget of cotton dipped in a saturated boric acid solution.

Uncontaminated urine may be obtained for bacteriological examinations by the same method, if the catheter is provided with a rubber sleeve projecting over the end. This is sterilized at the same time the catheter is treated, and after its introduction the urine is allowed to flow off for a few moments, and then the rubber sleeve is removed, thus securing a catheter whose external end is sterile. In twenty instances sterile urine was taken as a control experiment, and in every case it remained sterile.

A Simple and Inexpensive Method of Obtaining Cream for Infant Food.—

G. G. Campbell, in the *Montreal Medical Journal* for April, 1900, says that in the city where milk is delivered in quart bottles, they should be set aside in a cool place for six or eight hours, to allow the cream to rise. In the country, where each family has its own milk supply, or where the milk is obtained soon after it is drawn, that for the preparation of the infant food should be placed in

bottles. In separating the cream from the milk it is necessary, if uniformity is to be obtained, to draw the milk from the bottom of the bottle. A siphon for this purpose is easily made with a piece of glass tubing, twenty-one inches in length, of a quarter of an inch caliber. In using the siphon, hold it with the angle down and fill it with water, closing the long arm with the tip of the finger; then turn it with the angle upward, and introduce the long arm into the bottle of milk.

The cream is then Pasteurized, which can be conveniently done by fitting a thermometer loosely into the neck of the bottle and then placing it in a pan of water and heating it to 160° F. The whole is then set upon the back of the stove, where it is allowed to remain and slowly cool for about twenty minutes. At the end of this time the bottle is removed, and the cork, which has been perforated for the passage of the thermometer, removed and replaced by a plug of dry cotton. Cream prepared in this way will keep sweet for twenty-four hours without ice, and all that is necessary is to be sure in removing the cream that the cotton plug does not become moistened. This method of preparing infant food is simple and practical, and is well within the capacity of the average housekeeper.

Ovarian Insufficiency.—

F. Jayle, in *La Presse Médicale* of March 17, 1900, uses the term ovarian insufficiency to describe those cases characterized by hypofunction. These disturbances are not well understood. From a clinical standpoint he studies these symptoms to determine if they are due to suppression of the ovarian secretion, and if this can be diagnosticated by the character of the symptoms themselves. He comes to the conclusion that such a diagnosis is possible if the inquiry is especially directed to determine whether the disturbed function is transitory or constant, and if the pain starts directly from the ovary. The treatment is to be based largely upon the pain. Valuable indications are reached by the use of desiccated ovaries or ovarian extract. The physical examination is by no means so important; ovaries which are cystic and enlarged may contain more normal ovarian substance than those which appear quite normal as to size and consistence. The latter, however, may be in a condition where all normal ovarian substance has been replaced by sclerotic tissue. In the surgical treatment of such ovaries, whether cystic or sclerotic, it is always proper to remove all of the diseased portion, as such pathogenic tissues are devoid of function. All healthy ovarian tissue should be preserved.

Iodoform Poisoning in an Infant Two Weeks Old.—

J. C. Josephson, in the *Medical Record* of April 14, 1900, describes the case of an infant who, after circumcision which did not heal satisfactorily, was given an iodoform salve. The day after its first application the child was somnolent, with shallow breathing, and refused the breast. There was cyanosis, retraction of the epigastrium, and laryngeal spasm. The pupils were contracted to the size of pin-points. The circumcision wound had not yet healed, but a severe eczema had been set up involving the scrotum and the inner surface of both thighs. The temperature was 100° F. and the heart's action feeble. A hot enema was administered with a bath, and frictions with alcohol and mustard. One-minim doses of tincture of belladonna were given every hour. The following morning the child was in a normal condition, the pulse and respiration good. The eczema rapidly improved. The writer thinks that the contracted pupils and the coma were due to iodoform, as Wood has described cases presenting these symptoms. No opiate in any form had been used. He especially directs attention to the laryngeal spasm and to the apparent antidotal action of the belladonna.

Addison's Disease in an Infant.—

Netter and Nattan-Larrier reported to the Société Médicale des Hôpitaux (*La Presse Médicale*, May 2, 1900) an infant of three years who up to the present illness had been well. It was taken quite suddenly with diarrhea, gastric disturbance, and prostration. At the end of three days asthenia was marked, and there were complaints of pain in the upper part of the abdomen and lumbar region. The vomiting, elevated temperature, and the character of the pulse pointed to a peritonitis. A slight pigmentation of the abdomen was all that suggested Addison's disease, but the previous history of the patient did not support such a diagnosis. At the autopsy an ancient tuberculosis of the suprarenal capsules was found. Peyer's patches were swollen, but not ulcerated. The spleen, which was enlarged, furnished a pure streptococcus culture. The case is interesting from what appears an acute Addison's disease, the more pronounced symptoms of which developed coincidentally with a general streptococcic infection.

Epilepsy, Rickets, and the Lymphatic Constitution.—

A. P. Ohlmacher, in the *American Journal of Insanity* for April, 1900, calls attention to the previously reported cases which have come to autopsy in the hospital for epileptics at Gallipolis, in which

persistent thymus and other evidences of the lymphatic constitution were present. A further study along these lines has led Ohlmacher to the opinion that this so-called lymphatic constitution is closely associated with rickets, tetany, and infantile spasms. He reviews the literature and finds that much has been written upon the relation of epilepsy to rickets. Gowers, in nearly seventy-five of one hundred cases, found rickets in the history. These cases, of course, included the so-called idiopathic or early epilepsy.

FORENSIC MEDICINE.

Morphinism Influencing the Disposition of Property.—

A case recently reported in the *Quarterly Journal of Inebriety* for April, 1900, is that of a contest of a will in Pittsburg, Pa., of a testatrix who had been subject to the morphine habit. The husband of the deceased died in 1889, and she had begun the use of morphine six years before. The dose of the drug before the husband's death had not been large, and it apparently had little effect upon her mind. Prior to the time of becoming addicted to the habit she had shown a keen interest in household matters, and was consulted by her husband in business, and in every way showed a thorough grasp of affairs. In 1889, after the husband's death, a gradual change took place. From this time on the habit steadily grew, and there was a marked change in body and mind. Her skin became sallow, and she lost about one-third in weight. At times she was melancholy and at others apathetic. She opposed the marriage of her daughter, who had been her devoted nurse, because she did not want to lose her services. She failed to visit her oldest son, though he was lying near the point of death. At this time she made a will, giving all the property left by her husband, amounting to $1,400,000, to her two sons, and leaving to her daughter her personal estate, variously estimated at from $65,000 to $200,000. It is suggested in the testimony that her reason for making the will thus was an unconscious resentment against the daughter on account of her long-continued and anxious attempt to restrain the mother in the gratification of a morbid appetite for morphine. Even if this were the case, the question arises as to whether the testatrix had an "intelligent comprehension" of the business in hand. If she had the demand must be refused, but if she had not, then it is to be granted.

In the opinion by the judge, it was stated that the exercise of testamentary power presupposes that the testator shall understand

the nature of the act and its effects, shall understand the extent of the property of which he is disposing, shall be able to comprehend and appreciate the claims to which he ought to give effect, and with a view to the latter object that no disorder of the mind shall poison his affection, his sense of right, or prevent the exercise of natural affections; that no insane delusion shall influence his will in disposing of his property and bring about a disposal of it which, if the mind had been sound, would not have been made. This gives us a measure of the degrees of mental power which should be insisted upon. If the human instincts and affections, or the moral sense, become perverted by mental disease, if insane suspicion or aversion takes the place of natural affection, if reason and judgment are lost and the mind becomes a prey to insane delusions calculated to lead to a testamentary disposition due only to their baneful influence, it is obvious that the testamentary power fails and that a will made under such circumstances ought not to stand.

No decision was reached as to the merits of the case in hand, it being settled out of court. The above ruling of the court is broader than we have so far seen touching testamentary capacity; the warping of the mind by mental disease, insane delusion, and other conditions being taken into account if they are shown to have influenced the disposition of the estate.

Suicide in a Private Asylum.—

In the *Journal de Médecine de Paris* of April 8, 1900, is an account of an exceedingly interesting case in which judgment was returned against a physician in charge of a private asylum in France. The patient was a young woman affected with suicidal mania, who had been placed by her parents in a private institution for the insane. The girl, while in the care of the nurse, asked to retire to the closet. As soon as she had entered she locked the door, which she was able to do by the aid of a bolt on the inside. The nurse attempted to gain admission, but did not succeed, and when help was obtained and the door broken in, it was found that the patient had suicided by suspending herself with a band of cloth to the fastening of the window. An action was brought by the parents claiming neglect on the part of the physician. In the trial it was claimed that the father of the unfortunate patient had called the attention of the physician to the danger of just such an attempt made in the manner in which it occurred, to which the physician responded carelessly that there were other means which the patient would probably choose. Judgment was returned for the entire sum demanded—ten thousand francs.

We do not remember to have seen a report of a similar case, where suit was brought against the proprietor of a private institution for the insane, but it would be an exceedingly interesting question to determine what degree of care and diligence is required on the part of the manager of such an institution to protect those under his care.

Powers of Boards of Health in Threatened Epidemics.—

A recent decision of the Supreme Court of Indiana (*Journal of the American Medical Association*, May 5, 1900) sustains the State Board of Health in excluding non-vaccinated children from the public schools. The Supreme Court, in its decision in this case, held that such exclusion was within the sound discretion of the health board exercising within the limits of the statutory provisions regulating the public health. It says that the question of the value of vaccination as a preventive of smallpox is one which does not lie within the province of the court. Decisions in other States, which were relied upon in support of the contrary view, are said not to be in point, because in each of the cases cited the court held that the exclusion of non-vaccinated children from the public schools was not warranted, as the health authorities had not proved that there was danger in these particular children entering the schools. In the case before them it was proven that there was an epidemic of smallpox, and in the opinion of the Board of Health it was dangerous for unvaccinated children to attend the schools. Therefore, in the exercise of a sound discretion in the interests of the public health, the children were excluded. The court holds that this is the proper function of a public health officer.

Privileged Communications.—

The Lancet of May 5, 1900, has editorial reference to a case recently tried in Nottingham. A charge of adultery was brought against a woman, and relief was prayed for on the part of the husband, against whom a separate maintenance order had been entered. In support of the contention Dr. Hunter, the medical attendant of the woman, was summoned and asked what the nature of the illness was for which he had attended the woman. He refused to answer, giving the following reasons:

"First, that it would be a breach of professional secrecy, which conscientiously I hold to be inviolable.

"Secondly, that it would be an infringement of my graduation oath—which I am prepared to read if the magistrates wish it—an oath which, as a graduate of a Scottish university, I took not to divulge anything in connection with my patients.

"Thirdly, that the infringement of this oath might render me liable to pains and penalties at the hands of the General Medical Council, which council might disqualify me from further practice.

"Fourthly, that to answer this question might render me subject to an action at law by the defendant in this case.

"Fifthly, that no high legal decision has ever been given as to the power of magistrates to demand or to extort answers to questions of professional secrecy in a civil court.

"Sixthly, that in the case of Kitson *vs.* Playfair, Justice Hawkins, in his summing up, said words to this effect: That he could quite understand a case — especially a civil case — where a doctor was quite justified in refusing to divulge questions of professional secrecy.

"Seventhly, that to answer such questions would give solicitors and magistrates unlimited power to drag from medical witnesses questions of professional secrecy and confidence, and that therefore it is probable that people might suffer serious illness rather than call in medical advice, so long as the possibility exists of these questions being made public in open court."

Who May Testify in Insanity?—

The Court of Appeals of Kentucky (*Journal of the American Medical Association*, May 19, 1900) says that in the case of Abbott *vs.* Commonwealth it is well settled that persons who are not experts may give an opinion as to the mental state of an insane person. The facts upon which the opinion is based must also be given. The reason given by the court is that insanity is often shown by a flash of the eye, an expression of the face, a movement of the muscles, or a number of slight circumstances, which, while they may produce a conviction in the mind of the observer, cannot be reproduced for the jury. The judgment of a person's intimate friends and acquaintances as to his soundness of mind the court thinks is therefore of great value.

The above, we think, is closely in line with the opinion held in most States, and those who are conversant with insanity will concur in the correctness of the legal dictum, providing that the observation of the lay people is made prior to the commission of the crime, and not based upon observations of an accused person after the question of mental soundness is raised. When a person's mental capacity is once questioned, then laymen are inclined to see in his conduct the "flash of the eye," change in expression, or movement of muscles, which to laymen are such striking features in the symp-

tomatology of insanity. The testimony of friends and acquaintances is frequently invaluable to both the physician and the courts in estimating the mental condition of a patient, but it is only of value as showing the *change* in the person as exhibited by his manner, conversation, actions, etc. This is frequently all that the physician has to guide him in coming to a diagnosis of mental disease. When, however, the layman starts out to study a person for the purpose of making a diagnosis of insanity he almost always blunders, pronouncing the sane to be insane, and those whose mental disease is apparent to the skilled, as devoid of any element of insanity.

The decision further on holds that every physician is not necessarily an expert on insanity, though the nature of his calling makes his opinion of more value than that of lay people.

Attendance of Physicians in Court to Testify.—

In the *Journal of the American Medical Association* of April 28, 1900, is found a reference to a decision of the Supreme Court of Arkansas which is of some importance to physicians, whose burdens in the administration of justice are far beyond those of any other profession. The case is one which came up on plea asking for a reversal of judgment in a personal injury case which had necessitated amputation of a foot. The chief point relied upon was the alleged abuse of discretion of the trial judge in refusing an attachment for a physician who was wanted as a witness in the case. The Supreme Court held that there was no error in refusing the attachment because the company could not enforce the doctor's attendance, there being no showing that he had been summoned and failed to appear and give his deposition. Under the Arkansas statute, the court says, the deposition of a practicing physician may be used instead of his testimony, *ore tenus*. The Arkansas statute is one which might wisely be copied in most States of the Union. The Supreme Court says such a statute enables a physician to say whether he will appear at the trial or testify by deposition. The chief hardship in these cases is the attendance upon court with the loss of time which it entails.

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ORIGINAL ARTICLES.

THE EXAMINATION OF SPUTUM FOR TUBERCLE BACILLI.

BY CARL WEIDNER, M.D.,
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The finding in one or the other of the tissues of the body of Koch's tubercle bacillus decides the existence of tuberculosis. The proof of its existence in the sputum determines the diagnosis of tuberculosis of the respiratory tract. In many cases, on account of similar physical signs, it is impossible to make a positive diagnosis without it. In the early stages of the disease it is of the utmost importance from a diagnostic as well as a therapeutic standpoint. It is most desirable, therefore, to the clinician in daily practice to have a positive, infallible method of making a differential diagnosis between the tubercle bacilli and other bacilli that may be similar to them in appearance or in staining reaction.

There are two methods of making a positive diagnosis of the tubercle bacillus—cultivation on nutrient media, and the inoculation of animals; but these require too much time and trouble for practical purposes, and they will therefore not be considered in this paper.

The clinical diagnosis of the tubercle bacillus is usually made from its morphology, its arrangement in the field of the microscope, and its special staining reaction. The staining reaction has been our stronghold in the microscopical diagnosis of sputum, urine, etc. This staining reaction depends upon the fact that the tubercle bacillus stains with difficulty and only after prolonged action of the dye or with heated fluids. Once having taken up the stain, however, it resists decolorizing agents such as acids, alcohol, etc. There are

some other bacilli which have similar characteristics, such as the lepra bacillus, the so-called syphilis bacillus of Lustgarten, and the little harmless epiphyte which is found in the smegma, about the external genitals and anus, the so-called smegma bacillus of Alvarez & Tavel and Matterstock. The necessity of differentiating between these is obvious.

The lepra bacillus in this country, up to the present day, concerns us but little, especially when we speak of sputum examinations. The lepra bacillus stains easier than the tubercle bacillus, taking the stain more readily, even by cold dyes, and is more easily decolorized by acids and alcohol.

For the so-called syphilis bacillus of Lustgarten there have been devised special staining methods. The question is still undecided as to whether this is the specific organism of syphilis, so I shall omit its consideration entirely.

The smegma bacillus, for reasons I shall mention later, is of especial interest. It is, as far as is known to-day, a harmless bacillus. It may be found in different localities and may reach the sputum or lung, as in a case I shall cite, and it possibly more than any of the others behaves, as far as staining is concerned, similarly to the tubercle bacillus. It will accept the same stain, and in many ways behaves like the tubercle bacillus.

The classical methods that have been in use for the preparation of sputum for microscopical examination for the tubercle bacillus have been those of Koch, later modified by Ehrlich, and now known as the Koch-Ehrlich method. In this method cover-glasses are prepared in the usual way: sputum, or whatever is to be examined, is spread in a thin layer between two clean cover-glasses, dried thoroughly, and then drawn through the flame of a Bunsen burner slowly three times as Koch advises, so as to fix all the albuminous substances; then the stain is placed on top of the cover-glass. This stain consists of a concentrated alcoholic solution of either fuchsin or gentian violet 16 parts, and anilin water 84 parts, best prepared freshly each time. The cover-glass is heated, and the fluid replenished if necessary, then it is washed in water. Following that it is decolorized in a watery 33-per-cent nitric acid solution, and thoroughly washed in water. In this way the color is taken out of everything except the tubercle bacilli. We can now examine the specimen, but for the sake of getting a better picture we use a contrast stain; after washing the cover-glass with water for quite a number of times to get away all the acid, it is counter-stained by a solution of either methylene blue if we have used the fuchsin, or

of Bismarck brown if we have used the gentian violet. It is then again washed in water, thoroughly dried, and mounted in balsam. Guenther gives preference to xylol as a clearing agent and to xylol balsam for mounting such specimens, because the anilin dyes are less liable to be affected by xylol than by other clearing agents, such as the ethereal oils, or by chloroform balsam.

Whatever method of staining is employed, the principle is the same. In the Ziehl-Neelsen process a mixture of 90 parts of a five-per-cent solution of carbolic acid with 10 parts of a concentrated alcoholic solution of fuchsin is employed. The staining is carried out exactly as in the other method. The decolorizing is done by a 25-per-cent aqueous solution of sulphuric acid. This has been modified; a good many use acid of less strength.

The next method which is used a great deal in this country is known as Gabbet's or Fraenkel's method. The staining is done exactly as in the other methods referred to. The decolorizing and counter-staining are done by one solution so as to save time, the solution consisting of sulphuric acid and methylene blue combined.

Almost invariably I use the method taught me by the personal demonstrations of C. Guenther; possibly the high opinion I have of him as a teacher, his thoroughness, and his ability to teach the student how to prepare fine specimens, have influenced me. I have always been perfectly satisfied with his method. It is highly recommended by Guenther himself, and he lays great stress upon the minutiæ of its execution.

1. Spread the sputum upon the cover-glass, as a thin homogeneous layer. This is best done by means of a sterilized platinum wire loop fixed in a glass rod, because it is well suited to pick out the purulent masses from the sputum, and because it is cleaner than the common method of spreading small particles of sputum between two cover-glasses.

2. Dry the sputum thoroughly in the air.

3. Fix it by passing it through a flame three times.

4. Float the cover-glass with the sputum side downward in a watch crystal full of Ehrlich's solution of either anilin gentian violet or anilin fuchsin.

5. Heat over a small flame until the staining fluid begins to boil.

6. Set aside for one minute to prolong the action of the stain.

7. Remove the cover-glass with the forceps and, without washing it in water, place it in a solution composed of 3 parts hydrochloric acid and 97 parts absolute alcohol. Leave in this solution for one minute and rinse well in distilled water. The specimen ought to appear nearly free of all color to the naked eye.

8. Counter-stain in a weak solution of methylene blue for several minutes.

9. Wash in distilled water, dry in the air, and if you want to keep the specimen, follow at once by passing it again through the flame. This is done for the purpose of getting rid of all acid which might have a decolorizing effect later on; then mount in xylol balsam and inspect with a good $\frac{1}{12}$ oil immersion lens, using open condenser and maximum illumination.

The picture will be as follows: If you use fuchsin you will see the tubercle bacilli as little red rods upon a blue ground. Everything that is red should attract attention. Not everything that is red, however, are tubercle bacilli. We have other substances which may accept this red stain, and we ought to differentiate them. Epithelial scales, hair, fatty crystals, etc., may be affected in this way where a single stain is used; spores of any bacilli may also be stained, as we know, but these have a different shape, and we ought to differentiate each one of these substances from the tubercle bacilli. The latter are arranged singly, or in little bunches, or frequently in a V-shaped arrangement, and they are spread all over the cover-glass. They are slightly curved and often have a beaded appearance, which is so characteristic in active bacilli well prepared. It is of the utmost importance that these directions be followed scrupulously. While listening to the teacher referred to I thought him rather dogmatic; I have since praised him for thoroughness. It is the *accurate execution* of this method that gives it success. I would lay particular stress upon two points which are of great advantage in the method: First, the floating of the cover-glass with the smeared side down, instead of holding it with forceps as usually done, with the stain on top. The second advantage is in the method of decolorizing by a weak solution of acid in combination with strong alcohol.

In the *Berliner Klinische Wochenschrift*, No. 37, September, 1898, Pappenheim reports a case of considerable interest, and which makes us think about this subject and our ability to distinguish tubercle bacilli from everything else. The patient was a woman 30 years of age, who had been under observation with symptoms of enteritis supposed to be due to an intestinal parasite, as proven by worm eggs found in the feces, probably one of the tænias. At all events there was a follicular enteritis. Then she developed signs of bronchitis, dulness over the lower lobe of the left lung, and a copious purulent expectoration. Examination of the sputum by Gabbet's method showed red rods like the tubercle bacillus, and a diagnosis of tuber-

culosis was made, but had not been thought of previously. The woman died, and the autopsy revealed that she had chronic bronchitis, bronchiectasis, bronchopneumonia, and a small abscess of the lung. Nowhere was there a sign of tuberculosis. The tissues showed numerous staphylococci, but no red bacilli if examined in the usual way; but the tissue did show the same red bacilli as those previously found in the sputum if the sections were examined in glycerin without having been passed through alcohol. The conclusion was then arrived at that these were not tubercle bacilli, but belonged to the class called smegma bacilli. These smegma bacilli naturally attract attention as they give us a red color, but if passed through alcohol for any length of time before counter-staining the red stain is given up, while the tubercle bacilli retain it. This is one of the greatest differential points between these two organisms. Still the question may come up: Do we have a perfectly positive, practical, and safe method? If not, we ought to look for a safer one. The addition of alcohol before counter-staining is proposed by various authors in order to overcome this difficulty; others have proposed to leave off the acids entirely or to use very weak ones. This is also covered by Guenther's method, as he uses only a three-per-cent solution of hydrochloric acid. Housell uses a three-per-cent solution of hydrochloric acid and alcohol for ten minutes, and then follows by counter-staining in the usual way. Czaplewsky uses fluorescin alcohol for decolorizing.

Bunge and Trautenroth have proposed a method especially for differentiation between the smegma and the tubercle bacilli, finding it necessary to remove from the specimen all fatty substances by leaving it for three hours in absolute alcohol; then for five minutes in a five-per-cent chromic acid solution; then staining with carbolfuchsin in the usual manner; afterwards decolorizing for three minutes in dilute sulphuric acid solution, followed by alcoholic methylene blue.

Pappenheim, after trying various methods, has seen fit to propose a new method, which he states has given him satisfactory results in arriving at a positive differentiation between the smegma and tubercle bacilli. The first step is to stain the specimen in hot carbolfuchsin; secondly, drain the stain away; and thirdly, without washing, to dip the specimen five times slowly (thirty seconds) into a solution of one-per-cent coralline in absolute alcohol saturated with methylene blue; then to rinse in water, dry, mount, and inspect.

You will see there have been various efforts to improve our

methods. We ought to be most careful in making examinations for the tubercle bacillus, as it is of the utmost importance. Possibly the prolonged immersion in alcohol as stated will overcome most of the difficulties that are liable to cling to the method, especially so far as differentiation between the smegma and tubercle bacilli is concerned. We ought always to make several preparations instead of only one. If you do not find the bacilli the first time, and if you are not sure about the diagnosis, prepare several specimens.

Another method which has been recommended is known as the method of Biedert, which is boiling the sputum with a solution of caustic potash or borax and then examining the sediment. Since we have the centrifuge to throw down the sediment, this method is easy. The solid part of the sputum is thrown down as a precipitate or sediment, and a small portion of this may be spread and examined by any of the methods described. By precipitation we are able to get a better idea of the total number of bacilli.

As to the quantity of bacilli found: The absence of tubercle bacilli may not be positive proof of the absence of tuberculosis. The repeated absence, however, of bacilli in purulent sputum I consider with most authorities to be positive proof of the absence of tuberculosis. The number of bacilli as far as my experience has taught me is of no value in giving a clue to the progress or prognosis of the case. I have seen cases in advanced stages of phthisis with a small number of bacilli, and others in the early stage showing a very large number present in the sputum.

Another point that I desire to emphasize is that we should always use a controlling stain whenever we are in doubt. We ought to have several preparations and use two methods in order to make the procedure safe. In this way we are more likely to arrive at a correct diagnosis and avoid mistakes.

ANKLE SPRAINS.[1]

BY EDWARD H. OCHSNER, B.S., M.D.

Sprains are by far the most common joint injuries, and of all the joints of the body the ankle is the one most frequently involved; in fact, ankle sprains are probably as numerous as all other sprains combined.

A sprain may be defined as the result of a sudden wrench or twist of a joint in which the usual range of motion has been exceeded. It may vary in degree from the slightest twist, the effects of which may subside in a few moments, to a severe injury, the result of which may be troublesome and annoying for months and even years. What we may be compelled to diagnose as a severe sprain when the patient comes to consult us, may have been a momentary dislocation at the time of injury.

Sprains may be complicated by, or themselves complicate, dislocations and fractures. A simple, uncomplicated ankle sprain may be caused by a misstep or a fall, but in the majority of cases it is the combination of these two factors that produces the result. The patient falls or jumps down a few feet, and because of some unevenness of the ground, or because of improper innervation of the muscles of the leg, the foot is forcibly inverted and the ankle is sprained. This accident is most apt to occur in two classes of patients: First, persons who have very hazardous occupations, who are compelled to jump and leap a great deal, not always being able to note carefully where they are going to land, such as circus riders, acrobats, trapeze performers, pugilists, baseball and football players, structural iron-workers, carpenters, painters, bricklayers, and probably commonest of all the maid who has to wash windows and hang curtains, using unsteady and broken tables and rickety step-ladders. Secondly, young and middle-aged women of the well-to-do and wealthy classes, whose ankles are naturally weak, or weak, at least, in proportion to their body weight. Here we have a mode of life producing in two ways conditions especially favorable to this accident. Because of good living and insufficient exercise a disproportionate amount of adipose tissue is deposited, increasing unduly the body weight; the muscles become flabby and do not respond rapidly and precisely to the will, leaving the ligaments improperly supported by the tendons at the critical moment. Finally, we must not forget to mention those patients who, because of repeated sprains, are liable to have a recurrence with the slightest twist or misstep.

[1] Read before the Illinois State Medical Society at Springfield, Illinois, June 16, 1900.

When a sprain takes place the synovial membrane is bruised and crushed; the ligaments, tendons, blood-vessels, and lymphatics may be torn. If the vessels are lacerated, effusion of blood will take place into the joint or into the surrounding connective tissue. The injury to the blood-vessels or lymphatics also interferes with the return circulation, and more or less swelling is sure to occur. The sprain being due to a sudden injury, the onset of pain is instantaneous and usually very severe, sometimes so excruciating that even a strong person may faint. Then, as the synovial fluid is secreted to bathe and separate the injured portions of the joint surfaces, the pain subsides, and if the injury has been slight it does not return. If, however, the blood-vessels and lymphatics have been severely lacerated, the contents will be poured into the joint, distending the capsule to such a degree as to produce a much more annoying pain because of its boring, burning, persistent character. The pain is much more severe when passive motion is attempted, and active motion is often quite impossible. Often there is general, more rarely localized, tenderness. Because of the increased blood-supply to the part the local temperature is usually somewhat elevated.

If one will but remember the above enumerated symptoms, recalling especially the fact that there is practically always the history of a misstep or fall, or both, and generally an interval of a few hours between the first sharp, excruciating pain and the later burning, throbbing pain, it is usually quite easy to differentiate an ankle sprain from a dislocation, a fracture, or a tubercular process, the only other pathological conditions with which it is at all likely to be confounded. If, however, the injured member is not seen until severe swelling has taken place, it may sometimes be quite difficult, and almost impossible, to differentiate between a sprain and a possible dislocation or fracture. In the latter cases, when the ordinary differential signs cannot be positively elicited, a skiagraph is of the greatest help in determining whether or not the different bones entering into the formation of the ankle-joint bear the proper relation to each other, or whether or not there is a line of fracture through one or more of these bones.

To make a diagnosis between a recent ankle sprain and well developed tuberculosis is very easy. To make a diagnosis between an old ankle sprain and beginning tuberculosis of the ankle is often quite difficult, and sometimes impossible. Especially is this true when the patient gives a very positive history of having sprained the ankle some months previously. In this connection it must not be forgotten that a severe sprain may often be one of the chief factors in determining the location of a tubercular process.

The following differential points may be of assistance in making a diagnosis between the two conditions:

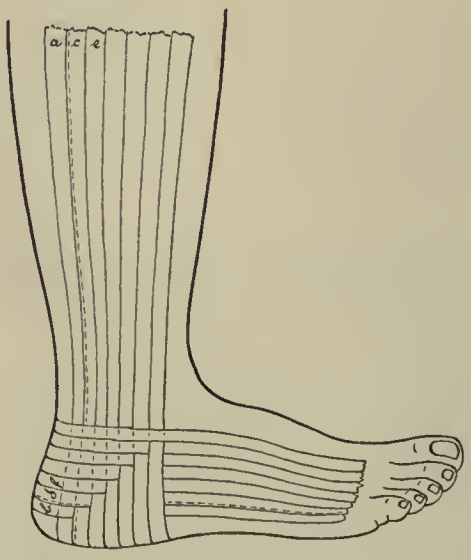
CHRONIC ANKLE SPRAIN.	BEGINNING TUBERCULOSIS OF ANKLE.
1. No marked influence on general health.	1. Often marked anemia and malnutrition even at an early date.
2 No pyrexia.	2. Usually a little evening temperature.
3. Often hypermobility due to lengthening of ligaments, the result of frequent spraining.	3. Joint held more or less braced and rigid, usually in slight extension.
4. No noticeable atrophy of leg muscles.	4. Usually marked atrophy of leg muscles. This is the characteristic sign of joint tuberculosis—a disproportionately large, fusiform ankle.
5. Quite severe pain on beginning to use foot, in moving or after a rest; then less pain as ankle becomes pliable.	5. Little or no pain on first using foot, but ankle becomes easily fatigued, and as it gets tired may become painful.
6. Little or no pain when at rest.	6. Though there is not apt to be much pain when at rest, it is more common to find pain in a tubercular ankle than in an old sprained ankle.
7. Rarely tenderness.	7. Often tenderness at a definite point early in the disease. This is especially true if the involvement of the joint proper is due to the breaking through of an osseous focus.
8. No characteristic deformity.	8. Even before the relative enlargement of the ankle develops there is often a slight fulness on the outer surface of the flexor muscles and on the inner surface of the tendo Achillis.

To this may be added that a good skiagraph will sometimes discover a tubercular focus in a case too early for the other symptoms to have developed.

If one looks through the literature on this subject one cannot help but be impressed with the chaos that exists on so simple a subject as the treatment of ankle sprains. A considerable number of the text-books and teachers state in unmistakable terms that the only proper treatment for ankle sprains is a plaster-of-Paris cast, applied directly after the injury and worn some weeks. Another almost equally large and authoritative number state with equal emphasis that the only satisfactory treatment consists in subjecting the sprained ankle to active and passive motion and massage, directly after the injury. A minority recommend cold or hot applications, with elevation of the limb and firm bandages, later plaster-of-Paris cast, and finally massage and active and passive motion.

After thinking the matter over, it seemed strange to me that any one would care to confine himself so rigidly to either of the first two methods as some of the authors would have one believe that they

do. Of the three general methods outlined the third certainly commends itself most highly to one's common sense, and it is the one that I would adopt were it not for the fact that I have seen a method demonstrated which is far superior to it in its results. The method which I wish to describe and demonstrate comprises practically all of the good features of the three, without any of the objectionable ones. It consists in careful and systematic strapping with rubber adhesive straps. The straps are cut from half to three-quarters of an inch in width, and the proper length. The width depends upon the size of the limb. If a small ankle the straps should be half an inch wide; if a large ankle they may be three-quarters of an inch, but no wider. Upon this, and upon the accuracy with which they are applied, depend the success of the method. If the straps are too wide, or if they are applied in a haphazard manner, failure is sure to be the result.



The foot is held at slightly less than a right angle and a trifle everted. The former element in the position is observed because it is easier to walk on a painful ankle if it is held slightly in the calcaneum position, than if held in the equinus position. The latter element is observed because ankle sprains are usually caused by a sudden inversion of the foot, thus injuring the external ligaments; hence, slightly everting the foot relieves the tension of these ligaments and places them at rest.

With the foot in this position one end of a long strap (*a*) is applied to the inner surface of the foot near its posterior end, brought under the heel, and up on the outer posterior surface of the leg to within a few inches of the knee. At the lower end this falls into the depression just posterior to the external malleolus. A shorter strap (*b*) is now applied by placing one end to the inner surface of the heel near the sole of the foot, then bringing it around over the tendo Achillis to the outer surface of the foot, making it cover the first strap at a right angle and passing along parallel to the under border of the sole of the foot, then over the dorsum of the little toe. Another long one (*c*) is now applied, anterior to the first, overlapping it about one-third of its width; then a short one (*d*), and so on alternately until the outer anterior aspect of the ankle is reached.

Over all this a hard-rolled bandage is now carefully and snugly applied. The patient is directed to lie still with the foot elevated until the warmth of the body has caused the plaster to adhere firmly. In a great majority of instances the patient can walk, with reasonable comfort, after a few hours.

The four cases that I wish to report are selected from among the number I have treated, because they illustrate four very different classes of cases:

Case 1.—A wealthy young lady, 18 years of age, weighing about 150 pounds, jumped from a moving street-car on to an uneven pavement, half a block from the hospital, about 10 A.M. She forcibly inverted her right foot, immediately suffering excruciating pain. After a few moments she hobbled to the hospital. The patient could not bear her weight on the injured member except with great pain. Active and passive motion were extremely painful, and there was some tenderness just below the external malleolus. There was practically no swelling.

I applied the bandage as above described, and the patient walked home, four blocks, without assistance, and with only a slight limp and slight pain. She kept her limb elevated during the day, and went to a dancing party that evening, where she danced several times. She then remained in bed for two days with the limb constantly elevated, and in one week after the injury the ankle was perfectly normal, so far as the patient was able to tell, although I directed her to leave the plaster on still another week in order to support the ankle. She has had no trouble whatever since.

Case 2.—A mail carrier, 60 years of age, while making his daily trip, stepped from a high curbstone on to a pebble, forcibly inverting

his foot; experienced a sudden, severe pain; walked home with difficulty, elevated his foot on pillows, applied bandages and ice-bag. For a few hours he had comparative relief; then the pain became worse, and six hours after the injury I was called in to see him. When I came into the room he was suffering very severely, and though a brave man he complained bitterly.

The whole ankle was markedly swollen and appeared about twice its normal size. It was moderately tender. I applied the bandage, and he immediately experienced considerable relief. The leg was kept elevated that afternoon and night. The following day he walked on it, although still somewhat painful. The second day he was better, and the third day he went back to his work, and has had no further trouble from it. I directed him to keep the bandage on for four weeks.

Case 3.—Housewife about 35 years of age, medium build, fell from a step-ladder a distance of twelve feet, severely injuring left ankle. Attending physician bandaged the leg and put patient to bed for five weeks.

Six weeks after the injury, when she had been on crutches for a week, I saw her. The ankle was swollen and almost black from the extravasation of blood that had taken place. She was unable to place the injured member on the floor without severe pain, and the previous two nights she had been unable to sleep. I applied the bandage; the pain was immediately relieved. The patient slept that night, and the next morning she was able to bear some weight on the foot. In a week she walked without the crutches, though still with a limp. In four weeks she had perfectly recovered, and the ankle has since been apparently as well and strong as the other.

Case 4.—Nurse, 25 years of age, weighing about 150 pounds. Eight or nine years previously she had severely sprained her ankle. She received the customary treatment and thought the trouble was perfectly relieved, until three years before I saw her, when she entered a training school for nurses. She was unaccustomed to the hard work, constant walking, standing, stair-climbing, lifting, etc., which nursing entails, and soon she had severe pain in the ankle that had previously been sprained. This continued to grow worse until about one year after she entered upon her training, when she was unable to continue her work. She was put to bed and a plaster cast was applied. The condition improved greatly, but after she again began to work the trouble returned, but was not so severe as at first.

Two years after this she consulted me, and I applied the band-

age. The relief was almost instantaneous. I left the plaster on for six weeks, and since then the ankle has been a great deal better than it had ever been since the original injury.

The question that all who have not tried this treatment are prone to ask is, "How is it possible that so simple an appliance, or dressing, can give such excellent results?" I can answer this only in part.

In cases like the first one, where it is applied before the swelling has taken place, it prevents, or at least limits, the effusion of blood and serum into the joint and surrounding tissues. It partly immobilizes the joint and supplants, in a measure, the lacerated ligaments. It relaxes the muscles and gives the joint a feeling of security.

In older sprains, like the second and third above mentioned, it supplies the very best kind of massage possible. The massage which a joint gets by the unconscious, or subconscious, motion under a dressing which exerts uniform pressure, besides being much cheaper and more accessible to all, is infinitely better than the massage which the most experienced masseur can give. This constant massage and motion rapidly dissipates the swelling by causing absorption of the effusion; it quickly and surely relieves the pain; it overcomes the tendency to stiffness; it restores the muscles and ligaments to their original vigor and strength; it reduces the period of treatment from weeks to days. It does all this, while the limb may be used with reasonable comfort, and perfect safety, from the day the bandage is applied.

In this connection I wish to describe and demonstrate a modification of this dressing, which I have found very useful in treating congenitally weak ankles and moderate degrees of flatfoot. The first strap, instead of beginning on the inner surface of the sole, begins a few inches below the knee on the inner surface of the leg, passes down over the inner malleolus, under the foot, over the outer malleolus to within a few inches of the knee on the outer surface of the leg. Now two short straps are passed from the tendo Achillis, one on each side of the foot near its plantar border, then another long one, then two short ones, and so on until nearly the whole foot is encased. Over this a hard-rolled bandage is applied.

In two cases of moderate flatfoot, now under treatment, I am unable to express myself as to the result. One has been fairly satisfactory so far; the other not at all satisfactory. But in neither case has the treatment been followed long enough to enable me to form an opinion. Four cases which I treated during last year were perfectly relieved.

In two cases of congenital weakness of the ankles I have obtained instant relief. The pain, which was due to overexertion of these relatively weak parts, has disappeared. In such cases, however, it may be advisable to apply the straps from time to time, as the patient may find it necessary to put her ankles to an excessive strain. This can be readily done by the patient herself when an extra exertion is anticipated.

Here, again, I attribute the success of the bandage to the uniform support which it gives the joint, and to the constant massage which it exerts upon it. This will, in time, greatly strengthen the joint by insuring healthy development of the muscles, tendons, and ligaments.

710 SEDGWICK STREET.

CONJUNCTIVITIS AND ITS TREATMENT; WITH ESPECIAL REFERENCE TO THE USE OF NUCLEIN SOLUTION FIVE-PER-CENT IN CONJUNCTIVITIS LYMPHATICA.

BY J. IVIMEY DOWLING, M.D., ALBANY, N. Y.

Among the many diseases affecting the eye none are more common than the various forms of conjunctivitis. Some of these affections are mild and respond readily to proper treatment, while others assume a chronic condition and can only be cured by energetic measures. In some instances the wearing of properly prescribed glasses is necessary, for many of the chronic varieties are but evidences of refractive error.

The conjunctiva is continuous with the free borders of the lids, from whence it is reflected back over the posterior tarsal surfaces of the upper and lower lids to the fornix, and here it is again reflected over the eyeball proper, continuing over the sclerotic and thence over the cornea, where it is transparent and made up of pavement epithelium constituting the anterior epithelial layer of the cornea.

The term conjunctivitis ordinarily means an inflammation affecting the palpebral or scleral portion of the conjunctiva, and not the corneal epithelium, which is considered under the diseases affecting the cornea. The more common diseases of the conjunctiva as thus understood are: Simple hyperemia, conjunctivitis acuta and chronica, conjunctivitis purulentia, including ophthalmia neonatorum and gonorrheal ophthalmia, and conjunctivitis lymphatica.

The simple hyperemia is shown by slight scleral injection and roughened appearance of the palpebral conjunctiva, together with the subjective symptoms of itching and smarting and a tendency to lacrimation when exposed to winds or smoky atmosphere. The treatment that is most efficacious is the instillation of boracic acid solution (ten grains to one ounce), which relieves the itching and smarting, and also hot applications of hamamelis over the eyeball, and internally any indicated remedy. As this is a prominent symptom of refractive error, the eyes deserve a careful examination, and the wearing of glasses is indicated.

Catarrhal conjunctivitis is a frequent sequence of neglected hyperemia, and is shown by the added symptoms of mucous discharge, swelling of the lids, and at times pain and photophobia; these symptoms varying from mild to severe degrees. Bacteria are now a recognized cause of this type of conjunctivitis, and so antiseptic treatment is applicable and efficacious. The local measures of greatest utility are the instillation of formalin (1:2000) four times

daily, or bichloride of mercury solution (1:5000); and during the earlier stages the use of ice cloths is beneficial. These measures failing to promote an absolute cure, refractive error is to be suspected and looked for, but even after proper glasses have been prescribed the eyes will frequently require some local and constitutional treatment to bring the tissues up to their former resistive powers.

The purulent forms of conjunctivitis are all of bacterial origin and require very careful treatment, for it is through this variety that vision is frequently impaired or the eyes totally lost. The most common forms of purulent affections are in infants, the so-called ophthalmia neonatorum due to a maternal leucorrhea, and in adults the gonorrheal variety due to direct contagion from the gonococci. The symptoms are practically the same and begin with slight redness of the lids accompanied with a heavy sensation; this is followed by swelling and discharge, first of a mucopurulent character, and later a thick, creamy pus. Accompanying the swelling and discharge pains shoot through the eyeballs and to the back of the head. The patient is unable to open the eyes, and the pus oozes from between the closed and swollen lids. Fever is often an accompaniment. Energetic measures are necessary to prevent implication of the cornea and subsequent impairment of vision. This is best attained by the use of ice cloths over the eyeballs in the early stage, and hydrogen dioxide (1:4) as a local application. The solution should be carried to every portion of the conjunctiva by a pledget of cotton attached to a cotton holder and moistened in the solution, then carefully insinuated under the upper lid and carried from the nasal to the temporal side; the lower lid is then treated in a similar manner, and this is followed by the use of bichloride of mercury solution (1:5000) applied in the same way. This treatment rids the fornix of offending matter and is absolutely the most thorough, but the use of silver nitrate solution is probably the most popular method of treatment. It should be used in the strength of five to twenty grains to the ounce, and when used the lids should be everted and first cleansed with warm water, then the silver nitrate solution applied with a camel's-hair brush, after which the lids should be washed with a saline solution to neutralize the silver nitrate. The lids can then be replaced and the operation repeated three times daily. The least drop of silver nitrate solution which comes in contact with the cornea is liable to set up a corneal complication with its dire results.

The general physical condition requires attention as to hygiene and diet, the former being attained by absolute cleanliness, the latter

by nourishing food given in accordance with the laws governing fever, if such is present.

A very important item in the hygienic treatment is the care of the unaffected eye in case only one is involved, and this is attained by guarding the sound eye with an ordinary watch crystal fastened over the eye by means of a circle of adhesive plaster over the glass, the lower external portion being left free for the entrance of air.

During the two years the author was in charge of the Children's Hospital of the Five Points House of Industry of New York City, numerous opportunities were afforded for the study of all the diseases affecting the scrofulous or rachitic subject, and among the most frequent of the local diseases was conjunctivitis lymphatica, or, as it is sometimes known, conjunctivitis phlyctenulosa or scrofulosa. This is an inflammation of the conjunctiva and involves the corneal-scleral junction. It is evidenced by small eminences involving the limbus of the cornea, and these are known as efflorescences, which form the apices of a series of blood-vessels running from the scleral conjunctiva. Pain and a mucous discharge are frequently present, but photophobia is practically a constant symptom. These efflorescences break down and form small ulcers, which heal in from four to ten days; and as one heals another springs up at the side, and so continuing until the entire limbus has been involved. Many times the iris is implicated. The course of the disease depends largely upon the number of efflorescences, and will vary from ten days to two or three months. This type of conjunctivitis is due to scrofula or the debility following some fevers, and is therefore prone to recurrences.

The treatment is medicinal, and also attention to the general systemic condition. The medicinal treatment is of a local and general character. Attention to the general system includes proper diet and hygiene. The diet consists in prescribing such foods as are readily assimilated, and the hygienic measures in keeping the patient in a well ventilated room, or if possible allowing free exercise in the open air, protecting the eyes with smoked glasses; but bandages, as a rule, are contraindicated.

The remedial measures are the prescribing of proper remedies and the local use of stimulating washes or powders. If the iris is involved a two-per-cent solution of atropine is indicated.

It is the purpose of this paper to report the efficacy of nuclein solution five-per-cent (P., D. & Co.) as a local remedy in conjunctivitis lymphatica, and with that in view the results of three cases selected from a number of experiments conducted at the Children's Hospital of the Five Points House of Industry are appended.

Case 1.—Jennie P——, aged nine. General condition, scrofulous; local condition, conjunctivitis lymphatica of a severe type, both eyes being involved. Disease began on November 29, 1897, and under regulation treatment continued until December 26. There being no improvement and a corneal abscess having formed, it was decided to try nuclein solution five-per-cent in conjunction with atropine. The atropine solution was instilled three times daily, and the nuclein solution likewise. This was the only treatment besides proper diet until the case was discharged cured on January 12; the eyes having assumed a healthy condition in *seventeen days* from the beginning of the nuclein treatment. The good effect of this treatment was noticeable within three days, and the resolution of the corneal abscess more rapid than under the usual treatment.

Case 2.—James F——, aged nine. Same physical condition as Case 1. Came under treatment December 28, 1897. Nearly the entire corneal limbus of the right eye was involved, with marked photophobia and pain. The treatment was the same as in the previous case. January 1 treatment was discontinued, and on January 5, 1898, patient was discharged from hospital.

Case 3.—John M——, aged seven. Scrofulous diathesis. Came under treatment January 1, 1898, for conjunctivitis lymphatica of the right eye, the entire corneal limbus being implicated. The treatment was similar to the other cases, and after thirteen days he was discharged cured.

These results show the efficacy of this treatment, as observed in a number of other patients, and warrant the belief in nuclein solution five-per-cent as a local remedy and stimulant. It is absorbed through the cornea in a similar manner as atropine, and comes in direct contact with the diseased tissues, thus stimulating cell activity and hastening resolution.

223 STATE STREET.

THE TREATMENT OF ABORTION.[1]

BY HENRY B. STEHMAN, M.D., CHICAGO AND LOS ANGELES.

The intelligent management of abortion depends upon an appreciation of the etiology, which may determine the successive complications that follow, and the proper estimation of existing symptoms as an index to the process which we are called upon to treat. The term abortion will be limited to the expulsion of the ovum during the first four months of its existence, and the paper will be confined to the discussion of questions which have to be solved belonging to this period.

Abortion may result from acute or chronic disease, general or local, of either parent, those due to trauma or accident, mental impressions, etc.—constituting unavoidable abortion; and avoidable or criminal abortion. In the first class, the expulsion of the ovum may be the result either of an acute febrile exacerbation, which may be one of the factors in precipitating the accident, or some chronic lesion, equally potent for evil, and thus the treatment will partake of the nature of prophylaxis; and if the latter be unsuccessful, the gravity of the case is increased by the complications which arise.

In the second class the methods employed in producing the abortion may not only determine the original symptoms, but have a causative relation to the various pathologic phases in their successive development, and thus form a key to the course to be followed.

From a clinical standpoint we consider abortion as *threatened*, and then *inevitable*, with its numerous *complications*.

Threatened abortion is recognized *subjectively* by the same symptoms which initiate the beginning of labor, only these are not so violent; nevertheless the intensity of the pain is in direct ratio to the age of the fetus—a point which it is quite important to recognize, because the more violent expulsive pain in the fourth month is to a certain degree the cause of the more frequent rupture of the membranes during this period, than in the first or second months. Incidentally, we may add, the placenta is likewise less dense, hence less firm, and more closely adherent to the uterine wall.

Objectively, by a discharge of the amniotic fluid, a faint show of blood, with a slight patulousness of the internal and external os, with scarcely any appreciative changes of the cervix. The treatment, of course, is rest, absolute rest, physical and mental, withholding stimulant food and hot drinks, avoidance of cathartics, etc.

[1] Read before the Pasadena (California) Medical Society.

Anodynes and sedatives are our mainstay, opium in liberal doses, and of its preparations paregoric frequently repeated is no doubt the best, viburnum, bromides, chloral, etc.

A threatened abortion becomes inevitable when the hemorrhage is excessive, the external os widely dilated, and the ovum presents at the ostium uteri.

The treatment indicated under these circumstances is arrest of hemorrhage if profuse, and the evacuation of the uterine contents; as a rule, the latter procedure will usually accomplish the former. The importance of the proper treatment of these cases is emphasized by the fact that the long list of pelvic lesions which go to make up the nosology of gynecology have for the most part their origin in just this condition, so that the stimulus for good work is not only the endeavor to save life, but also to avoid lesions of the uterus or its adnexæ, which mean years of invalidism. Moreover, the results obtained are so gratifying, the mortality being reduced to almost *nil*, that if for no other reason we are morally bound to eliminate any possible source of failure.

It goes without saying that all operative interference, in fact even our examination, should be prefaced by strict antisepsis, and that we should be satisfied with nothing short of similar precautions taken in puerperal cases. The hair of the vulva should be clipped, and the parts thoroughly cleansed with soap and water previous to the use of any antiseptic; washing the vagina with the same material, followed by an antiseptic, is also desirable, being careful, of course, not to do any violence to the vaginal epithelium. The principle is to get rid of the dirt previous to the use of antiseptics, and not, as is so often the case, mask the same by some loud-smelling antiseptic, and thus delude ourselves with the thought that the field is aseptic.

Hemorrhage signifies one thing when it occurs previous to the extrusion of the fetus, another when it appears as the result of separation of a fragment of the placenta. The former condition is generally found in the early months, the latter in the third and fourth months. The former is likewise generally continuous, and the latter periodic. The former is usually found while the uterine cavity still remains aseptic, in cases of involuntary abortion, while the latter is frequently associated with putridity of the remaining necrotic placenta; and it may be protracted for weeks after the rupture of the membranes and the expulsion of the fetus, and is invariably a sign of retained placenta. As a consequence, therefore, in the beginning of abortion, the field having been made

aseptic, the method of arresting the hemorrhage will be the means of accomplishing the separation of the ovum; that is to say, under any circumstances, in hemorrhage, the indication is complete separation of the placenta, and the more thoroughly this is done the more surely will the bleeding be arrested.

The simplest and therefore the safest method of accomplishing this during the early months is tamponing the os uteri and vagina with plain or medicated gauze; this plan will be found especially successful before the membranes have ruptured. As a fairly good working hypothesis it may be stated that as long as the external os remains partially closed and the internal open, the fetus is still *in utero;* when the internal os is closed, while the external remains open, the fetus is extruded, but the placenta, or a portion of it, still remains. It is therefore while the ovum still remains *in utero* that plugging is advised, and for the following reasons: The pressure of the gauze causes softening of the cervix, and by dilating the os excites uterine contractions; the retention of the blood encourages the placental separation by coagulation at the placental site, and thus the rhythmic uterine contractions, which are likewise induced by the pressure of the blood, continue, until the detachment is complete. In the meanwhile these vibrations have grown to such intensity that a regular storm of uterine expulsive pains supervenes; the gathering of these forces culminates in a climax which represents the finish of nature's method, and lying in the vagina, with the tampon, you will find the extruded intact ovum.

The hemorrhage has ceased, the pains are gone, the placental site is clean, and therefore, with strict asepsis maintained, there is no reason why convalescence should be delayed. Of course, it is presumed that the possibility of infection by criminal interference did not exist; while it may not always be safe to jump at conclusions, nevertheless in the early months at least the rupture of the membranes is rather conclusive that violence has been done. A specific history may possibly be an exception; at any rate, whether criminal or not, the tampon under such circumstances is not advisable.

As a rule, the external os continues patulous so long as any considerable portion of the placenta remains *in situ*, and for some little time after the expulsion of the fetus the internal os is likewise open; at this time a digital exploration with combined manipulation is quite possible, so that one can thus form an intelligent idea of the pathology of the case. Digital exploration should invariably precede any surgical interference, first because it is only by this measure

that accurate information of the placental site can be obtained, and secondly, it not infrequently occurs that the separation is so far advanced that it may readily be completed with the finger. Not that curettage with the finger is advised, as some do, but any one who has had experience will confirm the statement that in incomplete separation the placenta can frequently be readily peeled off by the finger. Moreover, it is only by the sense of touch that one can appreciate the existing conditions at the placental site as to whether it is covered with adherent placental fragments, or whether the uterine surface is relatively smooth. Objection may be offered because it is not always possible to pass the finger through the internal os, nor is it considered good surgery, but we maintain that curettage should always follow ample dilatation of the internal os—that it is no more unsurgical to introduce the sterile finger into the uterus than into the abdomen, and that no dilatation should be attempted without complete anesthesia.

It not infrequently happens that after removal of the placenta by the finger, intra-uterine irrigation is all that is required to accomplish a satisfactory convalescence, and the use of the curette will not be necessary, the assumption being that infection has not yet occurred. When infection has set in, we must invariably use the curette, and even in those doubtful cases where the invasion has extended to the adnexæ, careful curettage with proper after-treatment is indicated. The profession are not a unit on the question whether the operation should extend to the entire uterine surface, or be limited to the placental site. In my judgment it should be limited to the placental site whenever the local and general symptoms lead us to believe that the infection remains local, aud general curettage whenever the symptoms point to involvement of the pelvic viscera.

A word of caution on the manner of curetting may seem out of place, but after having seen the uterus perforated three times by this instrument within the last month, and having received a reprint in which it was stated that the operator not only punctured the uterus, but scraped twelve inches of small intestine through the orifice, I may be pardoned for saying that there is a safe way in doing the operation. In the first place, the instrument should be large and sharp; for general curetting we need a small one in addition for the fundus and cornua. A sharp instrument requires less pressure, and the denuded surface is clean, which allows the orifices of the vessels to contract and so controls hemorrhage. A large instrument is less liable to perforate a soft uterus, and, moreover,

one is more likely to do the work thoroughly, for in spite of our greatest precautions it is next to impossible to remove all of the decidua, and consequently all of the infection. The curette should invariably be held with the thumb, first and ring fingers, and the instrument bent upon itself to accommodate it to the angle of the uterus. Do not curette the internal os. The previous dilatation of the cervix will allow of easy movement of the instrument, and admit of free drainage subsequently. After-drainage is likewise a mooted point; theoretically—that is, judging from the principle of capillary drainage—gauze in the uterus is of little value, no matter how it is inserted.

Careful and repeated examinations have demonstrated the fact that curetting does not remove the entire decidua, and consequently every source of infection. We all are likewise agreed that nature's method of retracting the uterine wall, in its vibrations, from the ovum or ovular decidua is the ideal method, and consequently any plan of treatment which will stimulate these movements would seem rational.

Packing the uterus moderately tight with gauze, medicated or otherwise, does stimulate uterine contraction, and thus the undetached decidua is separated and adheres to the gauze, and the bloody serum which exudes is caught up by the gauze; this in turn is squeezed out, and the temporary anemia of the parietal vessels is relieved by a fresh supply of arterial blood. Not only in this way is nutrition of the uterus sustained, and sepsis counteracted, but the mild contractions which are thus induced favor to a high degree uterine involution.

Gauze that is left in the uterine cavity for twenty-four hours will be charged with serum, and the surface in contact with the decidual wall will contain patches of deciduous membrane. The use of iodoform in powders or suspended in gauze has still its advocates; we have never seen evil effects result from its exhibition in this manner, and believe that clinical results are greatly at variance with laboratory experiments, to the advantage of the drug. The use of gauze should be associated with intra-uterine injections, or irrigation with antiseptics, followed by sterile water, the persistence of which should be determined by the pulse and thermometer; the local and the general condition of course should receive proper attention.

The complications most usually met with are cystitis, endometritis, parametritis or perimetritis, salpingitis, ovaritis, and general peritonitis, the lesion being frequently determined by the mode, source, and route of infection, and the lack of treatment. Here

a clear diagnosis, especially from a bacteriological standpoint, is highly important, because it will not only assist in determining the gravity of the lesion by revealing the variety of infection, but will materially aid in differentiating a general from a local infection and thus determine the course of treatment. Not only when complications arise, but under all circumstances, whenever there is a suspicion of infection, bacteriological tests should be invariably made. It is hardly within the province of this paper to go into details in regard to the treatment of the pathology complicating abortions, but rather to insist upon methods which avert them, and also emphasize the point that when infection does occur, every available means should be employed to keep it local, and if successful in this respect, to attack any secondary point of infection that can be recognized at the earliest possible moment and by the shortest route. It is well to remember that an infection may be direct, that it may travel through the lymphatics or be transmitted by the tubes, and so inform ourselves as to the course or means employed to produce the abortion.

Trauma is quite common in criminal induction, and here it is readily seen how infection is direct, especially so since the instruments used are generally such as produce a punctured wound—a variety which we all recognize as the most dangerous of all wounds. In such cases we would look for a metritis in the beginning; in the absence of direct wounds, as the agent is always septic, an endometritis is a natural result, and under such conditions dilating and curetting are surely indicated, not only to remove the infection, but to favor drainage and prevent an extension to the tubes. Whenever liquids are used, the inference of infection is also tenable, because it would hardly seem possible that the fluid would be sterile, unless used for the induction of premature labor by a physician.

In injecting non-sterile fluids into the uterus it is possible that they may travel directly into the tubes, producing a salpingitis, or carry the infection into the pelvis, causing a local or general peritonitis. A case came under my observation in which the patient was in the habit of injecting glycerin into the uterus through a catheter in order to effect an abortion; she succeeded in accomplishing her purpose at ten different times, but in the last effort, however, either too much force was used, or the usual conditions were not present, for immediately after the injection colicky pains set in, and a few days later she developed a well marked pelvic abscess, which was evacuated *per vaginam*. When general peritonitis supervenes the prognosis becomes exceedingly grave. A short time ago

great hopes were entertained from the use of the antistreptococcic serum, but its value has not yet been demonstrated, and we are still limited in our treatment to the use of cordial stimulants and alcohol.

In conclusion, therefore, the principles underlying the treatment of abortion and its complications are briefly as follows:

1. The rendering of the vulva, vagina, and uterus aseptic, and so far as possible maintaining them so.

2. Arresting of hemorrhage, either by use of the tampon in the cervix or vagina, or by directly emptying the uterus.

3. In inevitable abortion, the ovum, or any part of the product of conception, should be removed as early as possible.

4. That intelligent curettage is invariably indicated wherever a vestige of placental decidua remains or any suspicion of infection is in evidence, and that a bacteriological differentiation is necessary both from the standpoint of prognosis and treatment.

5. When circumscribed local infection is a complication, evacuate the pus as early as possible and by the shortest route.

CHLORETONE AS A HYPNOTIC AND LOCAL ANESTHETIC.

BY FREEMAN F. WARD, M.D., NEW YORK,

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Hypnotics, at best, are only palliative, and are useful chiefly to tide patients over a critical period until they can be put in a condition to obtain a natural and normal amount of sleep. They perform a useful office by aiding us to put patients in a physical condition in which they will need no such artificial aid. An ideal hypnotic would be one which produced sleep without disturbance of the digestion, circulation, or other unpleasant sequelæ. We have hypnotics which come very close to meeting these indications, but there are none of them which are harmless if they are used for a long time and in quite large doses. One can but condemn the freedom with which the laity purchase the so-called harmless hypnotics. I have known of at least two deaths from twenty-grain doses of phenacetine taken upon the patients' own responsibility. Drugs of this character can be purchased as freely as coffee, and I have no doubt that if the experience of the profession could be recorded, it would furnish an appalling array of disasters due to the enormous consumption of sulphonal and trional by the laity, without professional advice.

I have personally experimented upon myself with a number of the later hypnotics to observe their effects. Among these, chloretone was found to be the most efficient and the freest from bad after-effects. Next to chloretone, trional is one of the best hypnotics. Sulphonal may often be administered with excellent effect, but the bad results which sometimes follow its administration make one fearful in its use. Upon myself, trional causes a slight dizziness which is noticeable the following day. In patients this was noted only occasionally. After taking chloretone for several nights in succession, I noticed in the early morning a slight headache, which disappeared after taking a cup of coffee. I am not sure that this headache was to be attributed to the drug, but not having been subject to it, it may be fairly charged to the chloretone.

After employing chloretone upon myself, I gave it freely to quite a large number of cases in which sleep was indicated. None of the patients knew what they were taking. One of the most brilliant results was in the case of a woman 84 years old, who, as a result of domestic bereavement, was unable to sleep for more than one or two

hours at night. This is but one of many such cases, and in only two patients has there been complaint of the slight headache on awakening in the morning.

Chloretone is a product of the decomposition of equal parts of chloroform and acetone in the presence of caustic potash. For a more exhaustive description of the chemical composition and physiological action, the reader is referred to the article by W. H. Porter in the *Post-Graduate* for May, 1900. Water dissolves one per cent at body temperature. It is not very soluble in gastric juice, but five grains is immediately dissolved by one drachm of alcohol. The best method of administration is to give from three to five grains dissolved in alcohol or whiskey, and follow with a glass of milk at bedtime.

Hypnotics generally have been attracting unusual attention of late, in connection with the treatment of various diseases. The neuron theory of the production of sleep, as developed by Dercum and others, is of especial interest in this connection. It is too much to say that this theory has been proved, but it furnishes an admirable explanation of certain phenomena, and appeals strongly to scientific common sense. It may be said to stand in the same position at the present time to neurology that La Place's nebular hypothesis stood in its earliest days to astronomy, and that Franklin's theories in the kite-flying experiments stood to electricity. The primary features of the neuron theory regard consciousness as having its seat in the cortex of the brain. A theory of sleep based upon this conception regards both the nerve cells and the dendrites as movable to a limited degree. Consciousness being the sum total of concepts due to the activity of these structures, it follows that as dendrites retract, there is a lessening of such concepts with a consequent narrowing of the field of consciousness, until it passes into normal sleep. If this theory of sleep is correct, it follows that drugs such as we are considering have their action explained by their effect upon the dendrites of the cortical cells. The superior dendrites are said by Leach to be depressed by the alcohol radicals of the ethyl and methyl type, while the inferior filaments most readily respond to the depressing effects of chlorine. The hypnotic agent which theoretically should have the best effect is one that would combine these two elements, chlorine and methyl alcohol, and at the same time shall have in its composition a minimum of other agents which may exert an unfavorable effect. In chloretone we have a hypnotic agent which seems to present these ideal theoretical advantages. It has been tested for some years at the Johns Hopkins Hospital, and it bids fair to come into general use as an ideal hypnotic.

Chloretone has served a useful purpose in a number of cases of excessive hyperacidity of nervous origin. These are a class of cases which seriously tax the resources of the physician, and in a number of such cases I have given chloral hydrate and belladonna with marked relief. This led to my employing chloretone, as it is a local anesthetic of some value. It was given in the form of a powder in three- to five-grain capsules on going to bed. It was found to be especially useful in those intractable cases of pain in the epigastrium which come on at night, interrupt sleep, and sometimes cause the patient to walk the floor and to take large doses of bicarbonate of soda. The drug was used empirically, and its beneficial effect is undoubtedly to be attributed to its local anesthetic action upon the gastric mucous membrane.

Chloretone would seem to be an ideal remedy in acute alcoholism, as we would not only obtain its hypnotic effect, but also its sedative action upon an irritable gastric mucous membrane. In such cases chloretone should be given in ten-grain doses dissolved in a half-ounce of whiskey or brandy, this to be followed in a quarter of an hour with a raw egg beaten in a glass of milk. This should be repeated each two hours until the patient is asleep.

I have used chloretone in one case of whooping-cough with marked benefit. A child four years of age was given five grains of chloretone dissolved in a teaspoonful of brandy; one-half of this dose was given at the beginning of an attack of coughing at night, and repeated if necessary. The first dose relieved the paroxysm and was followed by a quiet night's rest.

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BOOK REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Assisted by Charles Adams Holder, M.D. Volume II, June, 1900. Philadelphia and New York: Lea Brothers & Co.

The current issue of Progressive Medicine includes the surgery of the abdomen, hernia, gynecology, diseases of the blood, diathetic and metabolic diseases, diseases of the glandular and lymphatic system, and ophthalmology.

W. B. Coley has prepared an article upon abdominal surgery, including hernia. He opens with an excellent description of the several operations which have been advocated for the relief of gastroptosis. In speaking of the convalescence after operations for gastric ulcer, the writer says that the mortality table does not always express the difference between early and late operations. The frequent prolonged invalidism following late operations, even if life is saved, is not represented in the mortality table. Richardson is quoted as saying that the published cases of mortality following perforating gastric ulcer are given as too favorable to the operation, as he thinks that men naturally shrink from reporting the unfavorable cases. Up to the present time, ten cases have been operated on in the Massachusetts General Hospital, and only one recovered. The subject of appendicitis receives extended comment, due to the prolonged discussion still going on regarding this disease and the advisability of early or late operation. There is an interesting discussion of Andrews's contribution to hernia operations, and an extended consideration of the recent literature on plastic operations upon the colon. Harris's paper on the diagnostic importance of the relation of a distended colon to an abdominal tumor is given *in extenso*, corresponding with the importance of the subject.

The article on gynecology, by John G. Clark, gives the leading papers of the year in this department. The treatment of pelvic peritonitis upon conservative lines, as advocated by Stratz, is commented upon. It is admitted that there is much in Stratz's views that is of value, but it is stated that he claims too much for his hot sand-bag process and vaginal irrigation. It is also stated that diagnosis in some cases was in doubt. Of late the tendency has been to avoid the simpler means of treatment in favor of surgical measures. This tendency has gone too far. The complete tear of the perineum, with its repair as depicted by Kelly in the *Johns Hopkins Hospital Bulletin*, is reproduced. The experimental studies of Ries and Fraenkel are referred to, which clearly demonstrate the necessity of specially suturing the stump which is attached to the uterus after amputating the Fallopian tube. Sections by Ries show tubes that have been amputated without closing; the stumps remain patulous and a pathway for germs to the peritoneum. At the present time, when the tendency is to do a simple Cæsarian section rather than the Porro operation, the experimental work of Fraenkel on ligation of the tubes is of special value, proving as it does that sterility may be established by total excision of the Fallopian tube down to the uterine cornu. This avoids the distressing results which follow removal of the ovaries, as menstruation is not interfered with.

Alfred Stengel contributes the article on the diseases of the blood. He says

that no great improvement has been made in our methods of examination, but there has been extensive study devoted to it, and a revision of data accumulated by our present methods. Diabetes is extensively discussed, as well as glycosuria and diabetes insipidus.

Edward Jackson discusses the additions to the literature on ophthalmology. Conjunctivitis as a topic for writers is by no means exhausted; several pages are devoted to a *résumé* of the literature of that subject. Among interesting oddities noted is angioneurotic edema of the conjunctiva. Interest is still centered in the treatment of glaucoma by Jonnesco's method. The operative treatment of high myopia is discussed, the advantages of which are summed up by Würdemann, who says: "The dangers of operative interference are more than counterbalanced by the results to be achieved, which are, mainly, increase of visual acuity and of the visual field, and more extended use of the eyes."

SURGICAL PATHOLOGY AND THERAPEUTICS. By John Collins Warren, M.D., LL.D. Second Edition. Price, $5.00. Philadelphia: W. B. Saunders. 1900.

The work of Warren has grown into a volume of 873 pages and is thoroughly up to date. Like many of the recent works on surgical pathology, it opens with an account of the surgical bacteria. In this chapter is found about everything that is of practical importance relating to the bacteria of surgical diseases. A number of excellent colored plates illustrating the relation of bacteria to tissues are printed in the text. We would especially refer to them as being fine examples of plate work printed in the body of a book, particularly the illustration showing actinomycoses in the liver of a calf.

In discussing the vexed question of inflammation, the author first describes hyperemia, which is apparently regarded by him not as a precedent of inflammation, as it receives a separate chapter. Then follows a description of simple inflammation, and this is distinguished from infective inflammation, which is defined as simple inflammation plus bacteria, this making it a much more formidable type of disease. This arrangement of the subject of inflammation and its applications is more logical than the one which would place all inflammatory processes under infection. It is only begging the question to say that because much inflammation is due to bacteria, it necessarily all is, or that because a large percentage is due to bacteria, we must assume that the remainder is, although the remainder cannot be found. There is an excellent and lengthy chapter on the processes of repair, illustrated with colored plates, these showing the details of the process. In one of these we have a section of a wound through the abdominal wall undergoing healing by first intention. It shows the slow infiltration seen only along the line of the incision, and a suture infiltrated with leucocytes.

Shock is described as a profound but obscure disturbance of the system. Few writers attempt to define the nature of shock. The author contents himself by speaking of it as a functional disturbance in the vascular and nervous systems, and overcomes the want of definition by trying to present an accurate clinical picture.

There is an excellent discussion of surgical fevers, septicemia, pyemia, erysipelas, and hospital gangrene. These chapters show the marked advances in modern surgery made in the last few years. In them we have admirably contrasted the old and new methods of treating wounds, and the reason for

adhering to the antiseptic methods. In the chapter on tetanus we find no reference to the antitetanic serum and the results obtained by its use. There is also no mention of carbolic acid treatment of tetanus, though the protective results in animals are shown by the experiments of Tozzoni and Catini here referred to, as well as the use of this method in man, by the same observers. The studies which have been made on this subject would seem to entitle it to notice in a work published as late as the current year. The other portion of the work is taken up with a description of tuberculosis, carcinoma, tumors, etc. There is an appendix dealing with scientific aids to diagnosis, which includes a description of the practical application of bacteriological methods to various surgical conditions.

ELEMENTS OF BACTERIOLOGY. For Physicians and Students. By Earnest Levy, Professor in the University of Strasburg, and Felix Klemperer, Privat Docent in the University of Strasburg. Second Edition, Revised and Enlarged. Translated by Augustus A. Eshner, M.D. Price, $2.50. Philadelphia: W. B. Saunders. 1900.

Those familiar with the clinical bacteriology of these authors will feel under obligations to both the translator and the publisher for presenting the profession with so excellent an American edition. The present edition differs from the former in the fact that it is considerably augmented. Chapters have been added on the plague, and another dealing with meat poisoning, which is now stated to be due to a specific bacillus. The increase in size is largely due to the articles on immunity, diphtheria, typhoid fever, actinomycosis, and the examination of air and water. The work opens with a description of the morphology and biology of bacteria, in which we are met with the statement that there is no natural classification of bacteria, a statement with which we heartily agree. An attempt to classify bacteria, however desirable it may be, according to an intrinsic principle, is at present impracticable; therefore, the older method of following the general morphology, while very defective, must serve for the present. There is an excellent chapter on infection, immunity, immunization, and cure. The first part of the work closes with a chapter on the methods of culture and examination. Parts II and III deal with the relation of bacteria to inflammation and suppuration and the specific diseases of bacterial origin. The work closes with an account of the mycoses and an appendix dealing with the examination of soil, air, and water, and of practical disinfection.

INTERNATIONAL TEXT-BOOK OF SURGERY. By American and British Authors. Edited by J. Collins Warren, M.D., and A. Pearce Gould, M.S., F.R.C.S. Vol. II: Regional Surgery. Price, $5.00. Philadelphia: W. B. Saunders.

Volume II of the International Text-book of Surgery contains 1072 pages, and forms with Volume I, which deals with general surgery, the most imposing contribution of America to the subject of surgery. The work is divided into thirty-three chapters or topics. Each is under the charge of a special author, so that the work is in fact a collection of monographs. The length of the articles is carefully proportioned as to each other, and yet some of them are quite inadequate; for example, the chapter on surgery of the nose has a fairly complete description of the operations which may be done upon the external portion of this organ to improve the expression of the face. It will be apparent, however, how difficult it is to compress all that ought to be said on the surgery

of the nose in twenty-two pages. The author has succeeded in compressing the more important. It is necessary in preparing a systematic work which would include the entire subject of surgery to have chapters on what are really specialties, but it must result in their rather inadequate treatment. A topic of growing interest to American surgeons is that of surgery and surgical operations in the tropics. The surgical operations undertaken in warm climates do not differ from those in the temperate zone, but the conditions under which they are performed differ widely. The author gives a comparison of the surgery in warm and temperate climates. The death-rate from surgical operations during the sixties in Calcutta was only slightly higher than the mortality in London hospitals at about the same period. The filarial diseases come in for extensive descriptions, with their complications, lymph-scrotum, hydrocele, chyluria, and elephantoid disease. Tropical abscess of the liver receives extended discussion, and the fungous foot of India comes in for special mention. On the whole, this chapter on surgery in the tropics is a very interesting one to those whose practice has been wholly confined to the temperate regions. The work is handsomely illustrated, well bound, and forms a striking addition to surgical literature.

A Practical Treatise on Diseases of the Skin. For the Use of Students and Practitioners. By James Nevins Hyde, A.M., M.D., and Frank Hugh Montgomery, M.D. Fifth Edition, Revised. Price, $4.50. Philadelphia and New York: Lea Brothers & Company. 1900.

In the former numbers of Medicine we have referred to the earlier edition of Hyde and Montgomery's work on the skin, and it is only within a comparatively short time that we devoted considerable space to the fourth edition of this work. The present edition is fully up to the standard which should be maintained by the leading text-book on skin diseases in this country. The first edition of the work was published in 1883, the second in 1888, the third in 1893, and the fourth in 1897; this, the last edition, was reviewed at the close of 1899. This rapid exhaustion of former editions has given the authors an opportunity to revise and add to the value of the work, so that in its successive revisions it represents the actual progress in practical dermatology.

In those subjects in which there is comparatively little change the former chapters are nearly reproduced, but there is a reference to all the later advances, even when the subjects are still far from settled. There is a description of blastomycetic dermatitis. There are 111 engravings and 24 plates in colors.

A Cyclopedia of Practical Medicine and Surgery. Under the Editorial Supervision of George M. Gould, M.D., and Walter M. Pyle, M.D. Philadelphia: P. Blakiston, Son & Co. 1900.

As the title indicates, this is a cyclopedia which might serve, in a sense, as a dictionary. The bulk of the work has evidently been contributed by the editors, but the longer articles have been written by seventy-two American contributors. They have produced a large, and in the main satisfactory, volume. It is printed on extra heavy paper in good type, the headings being shown in extra heavy-faced type to facilitate reference. Any review of the contents is of course impossible in a work of such magnitude.

EDITORIAL COMMENT.

TREATMENT OF APPENDICITIS.

This topic has been so extensively discussed of late that it would seem that little can be said upon the subject. A superficial survey of recent literature shows a wide divergence of opinion. Many surgeons urge immediate operation as soon as a diagnosis is made, regardless of the stage of the disease, the condition of the patient, or the number and severity of the seizures. There has been a revolt from such extreme views, the great mortality from operations in the height of a severe attack leading even the operating surgeons to recede from such a position. The argument is advanced with some force that in every case of appendiceal inflammation there is a stage of congestion, with cloudy swelling preceding pus formation, strangulation, and involvement of the peritoneum. The length of this stage varies in different cases, but it is safe to say that if every case could be seen within the first twenty-four hours, an operation could be performed that would be almost devoid of mortality. Granting this, do we concede the advisability of operation in every case as soon as a diagnosis is made? By no means. There are many cases in which the early diagnosis is impossible. Some cases begin very insidiously, and a diagnosis is practically impossible in the early stages. Many patients do not come under observation until long after the early period is past; finally, a large percentage will not consent to early operation. It thus happens that most cases have passed the favorable period in which operation can be done safely.

After a patient has passed the early stage, what shall guide us in determining the necessity of operation? Naturally the severity of the symptoms. One writer after another has urged the importance of various symptoms—some are guided by the pulse, others by temperature, and still others by pain and vomiting. These should all have due weight. As was long ago pointed out, a relatively rapid pulse of a thready character is a more important danger-signal than a high temperature. This rule is subject to some variation; in nervous patients the pulse may easily be accelerated beyond the temperature. In such a case the symptom would have nothing like the value that it has in other cases. If the practice of

medicine could always be reduced to such simple rules, it would require but little judgment and less learning.

Pain is, next to pulse and temperature, one of the most important symptoms in appendicitis. If it is severe, we have commonly to deal with a grave case; but in judging this symptom discretion must be exercised. Some patients react to slight irritations to which others pay little attention. The individual equation must be carefully considered. Tenderness is also to be considered an element in the pain; if it is excessive, this also points to grave inflammation.

Vomiting is a symptom of great significance. Most patients have more or less nausea, and occasional vomiting is not infrequent early in mild attacks of appendicitis. Repeated intractable vomiting must be regarded as a dangerous symptom, usually marking a case of rapid and severe inflammation.

Tympanites and diffuse abdominal tenderness indicate an extension of the inflammation to the general peritoneal cavity, with all that such a condition implies. Abdominal infiltrations in the region of the appendix should be carefully examined every few hours and their progress noted.

The relation of these symptoms to the necessity for operation should be correctly appreciated. As we have already said, if a case is seen before the onset of severe symptoms and while the inflammation is still in the catarrhal stage, there is little danger from operation; but if this favorable point is passed, the operation is attended with a high mortality. Just what the death-rate is no one can say, and the published cases are practically valueless for comparison. Most writers agree, however, that it is somewhat higher than the figures usually given, due to the tendency to report favorable cases. The aim of treatment should be to avoid operation in the acute stage. When the symptoms become very severe, with rapid enlargement of the tumor, or extension to the peritoneum, severe vomiting, increasing pain, and a rapid pulse, operation must sometimes be done. Under these circumstances many cases will die, but the necessities of the individual case determine interference. The vast majority of properly treated cases never reach a stage requiring operation during the acute period.

The medical treatment of these cases, so much decried of late, is of great value; not that it will replace surgical measures, but it will frequently carry the patient over a critical period into the favorable one for operation. We are confident, if efficient medical treatment

is employed, comparatively few cases will require operation in the acute stage.

Treatment consists of absolute rest in bed and the external application of heat, either in the form of fomentations or hot-water bags. No food whatever should be given—only small pieces of ice, or water in small quantities. These measures should be employed in every case, no matter how mild. Cathartics and enema should be avoided, with the exception of an early large dose of castor oil to clear out the bowel, after which nothing should be given. Such treatment has for its object the putting of the parts at rest. This not only favors resolution of the inflammation, but if it goes on to suppuration it is the best means of localizing the infection, and preventing general involvement of the peritoneum.

The question of opium in appendicitis has been extensively discussed and its use generally condemned. It is said to "cover up" the symptoms, giving a false sense of security. It does relieve one symptom—namely, the pain—and if the physician is guided solely by the subjective sensations of the patient, it would undoubtedly give a false sense of security. If, however, he is guided by a careful physical examination of the patient, no such apprehension should be entertained. This drug rarely relieves the vomiting; it has little or no effect upon the pulse (excepting perhaps in nervous people), so that the significance of rapid and thready pulse is not obscured. Opium does not cover a rapidly developing tumor or tympanites. The watchful physician has nothing to fear from opium, and it will be of great service in the treatment. Not only does it relieve pain, but of still greater value is the quietness, not only of the patient, but of the intestinal tract. The latter favors walling off of the process, which is so essential if the infection extends to the peritoneum.

The correct treatment of acute appendicitis is absolute rest, no food, hot applications, and opium. In our judgment, if these rules are strictly followed, but few cases will come to operation in the acute stage.

The treatment of chronic appendicitis is operation. Those who have had a second attack, no matter how mild, should have operation urged. Those who have had a single very severe attack should be operated. It is to be remembered that the mortality is practically *nil* in the interval operation. A consideration that should urge operation is the ill health that frequently succeeds an appendicitis; and further, operation prevents recurrence.

THE RELIEF OF THIRST.

"To drink, or not to drink"—water, is a query that may be difficult to answer in some cases. The celebrated Schweninger obesity cure had for one of its cardinal ordinances the diminution of the amount of fluids taken. This was carried to the utmost limits of tolerance. It is difficult to say whether the marked reduction of fat which takes place under this diet is due to the diminution of fluids or to the fact that the excessive limitation of liquids leads to a decrease in the consumption of solids. Associated with and a part of the treatment was an immense reduction in the amount of food taken, it being served to patients in dolls' dishes, so that the amount actually taken was only compatible with maintaining the strength of the patient.

It is certainly true that large eaters are relatively large drinkers, and this is necessarily the case, as the chemical changes by which the various digestive acts are carried on employ a large quantity of liquid. We know of no very extended studies dealing with the relation which water bears in the diet of athletes who are in training, and the rule regarding the ingestion of fluids is certainly very different in different individuals, some under extreme exertion taking them abundantly and others restricting the supply. A recent writer (A. Philip, *Lancet*, May 26, 1900) has a note on the relief of thirst. He says that an invaluable method of relieving thirst is to place a small pebble in the mouth, which he says gives relief from this annoying condition. He says, further, that on a hot day the more you satisfy the craving for fluids, the more you perspire. From this he argues that the perspiration is a detriment. He states that he has exercised for as long as eight and a half hours in the hot sun without taking liquid.

This question is fraught with considerable interest from a medical standpoint. We had always supposed that the purpose of perspiration was to cool the body, by evaporation. During active exercise the production of heat in the muscles is increased, and when it reaches a point where the bodily temperature is raised one degree above normal, transpiration begins and the cooling process goes on. Undoubtedly valuable data could be obtained from the personal experience of athletes in relation to the ingestion of fluid and the amount of transpiration, and as to whether the latter was beneficial or to the contrary. Reasoning upon physiological grounds, the writer in *The Lancet* would seem by his method to expose himself to serious danger of heat-stroke or other complications growing out of an elevated bodily temperature.

DIAGNOSIS.

That a proper diagnosis is precedent to treatment no one will deny. At the same time, this may be accorded the dignity of fetish, with corresponding injury to the patient. The story of the patient who recovered without diagnosis, and to the great distress of the attending surgeon, will always be a pleasing anecdote. The patient was very low with an obscure pelvic trouble, and the surgeon suggested that she be given an anesthetic to clear up the diagnosis. The attending physician said that such a procedure would probably lead to a fatal termination, in which view the surgeon acquiesced, but said, "How will you treat the case without a diagnosis?" It was urged that the patient might get well without a diagnosis, and she did.

Similar cases teach us that in our zeal for scientific accuracy we may overlook the interests of the individual. In the *Therapeutic Gazette* of June 15 is a leading article on the use of iodide of potassium as a test in pulmonary tuberculosis. A protest is entered against the use of the drug in such cases, as it is claimed that it may result in an extension of the disease.

There is more than a suspicion current in the profession that the use of tuberculin is also attended with danger. Possibly there are other diagnostic means that are not devoid of danger. In any event, we should not forget that diagnosis is not the end of medical practice, but a means. Medicine should ever have two objects—the prolongation of life and the relief of suffering. To this end an accurate diagnosis is of the utmost importance, but it should never be worshiped as an end in itself. In employing any means or method we must always ask what effect it will have on the *individual* case. This is to be decided by all the circumstances in the case. It does not preclude the use of dangerous methods in diagnosis; the question is simply, Do the possible advantages outweigh the possible evils in the particular case? Scientific zeal must never obscure this important rule.

CACODYLATE OF SODIUM.

By the grace of excellent advertising this remedy has suddenly sprung into prominence in France, and if one is to judge by the frequency of the reports in the French journals, one could imagine that half of the entire population who are under medical treatment are receiving this remedy. The advertisements, which are more or less faithfully repeated in the clinical reports, state that it is arsenic in

the form of an organic combination. This permits of its being given in large doses, without the inconvenience noted from the administration of the "mineral" forms of arsenic. The amount of arsenic contained in the cacodylate of sodium is compared with that which is contained in Fowler's solution, and in consequence of the large relative dose of the cacodylate which may be given, is distinctly emphasized. It is furnished in three forms—a liquid, gelatin-coated pills, and in sterilized tubes for hypodermic injection. The reason that cacodylate of arsenic is so well borne by the stomach, as compared with other arsenical preparations, is due to the same chemical reason that ten grains of calomel would be better borne by the average stomach than ten grains of corrosive sublimate. Both of the latter substances contain approximately the same amount of mercury, but the state of combination is very different. In the case of calomel, the salt is insoluble and the specific action of the mercury is not obtained. The cacodylate of sodium may be introduced into the system in large doses, but it passes out in the same chemical combination in which it is taken in, and consequently the specific effects of arsenic are only obtained to a limited extent. What little effect of arsenic is obtained is due to the fact that a small portion of cacodylate is changed in the system.

We have never believed that arsenious acid was a good form in which to give arsenic, nor do we believe that Fowler's solution is a good form to use. A chemically pure solution of the arsenite of potassium would be free from objection, but the Fowler's solution as ordinarily prepared contains considerable free arsenious acid—at least this is the condition in which it is found in most of the shops.

The arsenate of sodium is by far the best form of administering the arsenic. It is freely soluble in water, of definite atomic weight if the water of crystallization is driven off, and entirely devoid of local irritating effects. It is readily absorbed. It is by far the most efficient remedy to use if the specific effects of arsenic are desired.

EXPERIMENTAL STUDY OF EPIDEMIC TETANUS.

In former issues of MEDICINE we have referred to the large number of cases of tetanus which followed the celebration of July 4, 1898. The mortality in Chicago was striking. In almost every instance the tetanus followed a wound made by a blank cartridge. H. G. Wells, in the *Philadelphia Medical Journal* of June 16, 1900, reports a case in which tetanus followed a wound made by a blank cartridge, resulting in recovery. This led him to an experimental study of the

question of infection in wounds produced in this way. He has made a careful bacteriological study of the blank cartridges which are on the market. All those which are for sale are manufactured by five firms; in all two hundred cartridges were examined, and in every instance there followed a negative result. In one a bacillus was found which somewhat resembled the tetanus bacillus, but it proved to be non-pathogenic. The writer states that the negative results of his investigations were unexpected.

The work of Wells, while it has not demonstrated the method by which 4th of July tetanus is produced, is yet of value in excluding the blank cartridge as one of the sources of infection. The blank cartridge in exploding almost invariably wounds the hands; portions of wadding are carried beneath the plantar fascia, and the difficulty of drainage in puncture wounds of the hands and feet is well understood. When the average patriot goes out to celebrate the 4th of July, he usually betakes himself to some vacant lot or the street of his native town, and after a few hours of energetic celebration his hands are covered with several layers of dirt. An explosion of a blank cartridge carrying the wadding beneath the skin is almost certain to take the tetanus bacillus in with it, as street dirt and stable manure are the special habitat of this bacillus. An absence of early cleansing of the wound, which is perhaps trifling and does not reach a surgeon, gives ample time and opportunity for this anaerobic germ to develop, with early general infection of the entire system.

A PNEUMOCOCCUS RESEMBLING THE PLAGUE BACILLUS.

Notwithstanding the efforts which have been made by sanitary authorities throughout the world, there is, month by month, a steady increase in the number of places reporting plague infection. A recent French writer expresses the opinion that there are probably at the present time several foci of infection in Europe which have not so far been recognized. Interesting in this direction is a report in *La Presse Médicale* of May 30, 1900, of a pneumococcus closely resembling the plague bacillus. The case is reported by E. Tretrop, director of the Bacteriological Institute of Antwerp. The patient was a longshoreman who had a small ulcer on the little finger. The surgeon in charge thought the sum total of symptoms closely resembled plague, and he directed that the patient be placed in the medical service, given a special room, and kept closely under observation. The man had worked at unloading an English boat

which was anchored in the harbor of Antwerp. The boat had arrived with a clean bill of health, the cargo being composed of laminated copper. In the course of his work the patient received an injury to the finger. Before entering the hospital the patient had diarrhea, vomiting, fever, and subacute delirium. Two whitish ulcers were found on the dorsal surface of the little finger of the left hand. The ganglia in the left axilla were enlarged, constituting a true bubo, tender on pressure. The temperature was marked, being above 104°. The patient was immediately given forty cubic centimeters of an antiplague serum prepared in the Pasteur Institute of Paris. In the next twenty-four hours there was a fall of temperature and an improvement in the general state of the patient. An examination showed an absence of the plague bacillus, but the presence of the pneumococcus of Talamon-Fraenkel, associated with staphylococci. Cultures from the blood furnished the same virulent pneumococcus. In less than twenty hours a diagnosis of pneumococcic septicemia was made. The favorable effect of the antiplague serum leads the reporter to speculate as to its probable action in overcoming this special infection. An interesting point regarding the report is the close resemblance of the symptoms to those commonly associated with the plague bacillus and the necessity of careful bacteriological examination in all such cases. It is a deplorable fact that our public health service is so poorly equipped for dealing with an infection such as the plague, should it become epidemic in this country.

THE CASE METHOD OF TEACHING MEDICINE.

Recently the Harvard Medical School has adopted what is described as the case method of teaching medicine. This, in fact, is similar to the same method which has been in vogue in the law school for almost twenty years. The students are given certain typical cases in which the history of the symptoms is set forth and from which the student is expected to make a diagnosis, give the treatment, and such other suggestions as may be asked by the instructor. This method of teaching medicine was recently discussed in the Boston Society for Medical Improvement, and received the unqualified indorsement of the president of Harvard University. Its advantages were vividly presented by W. B. Cannon, a student in the Harvard Medical School.

The case method, as applied to medical instruction, is certainly worthy of trial. The present methods, by which the student is

passively taught, are to be replaced by stimulating in the student an active effort to acquire knowledge. The old didactic lecture has largely disappeared, although, as was stated by Dr. Elliot, it survives to a greater degree in the medical school than in any other department of university teaching. It has been replaced to some extent by the clinic, and this, as commonly conducted, particularly those of the surgical variety, is sometimes disrespectfully spoken of as "vaudeville." Especially is this true where they are conducted in large amphitheaters, where all that the students, even those in the front row, can see are the white gowns of the surgeon and his assistants, and the pleasing stripes of the dresses of the trained nurses. The effort has been made in the leading medical schools to bring the student in close contact with the teacher, dividing the large classes into smaller sections, to see if something cannot be done to educate the eye, hand, and ear of the beginner. This, to some degree, has been accomplished. A further effort is now being made in many schools to institute what are known as recitations, which are simply a going back to the primary school methods, in which the student is assigned a lesson which he is expected to learn and recite at certain stated periods. The recitation has some advantages for beginners. We see in this new departure of the Harvard school an advantageous method of teaching students to think, and, in a certain sense, to grapple with problems similar to those which will confront them after they enter practice.

ABSTRACTS.

MEDICINE.

Typhoid Fever Among the American Soldiers in 1898.—

Victor C. Vaughan chose this as the topic for the annual oration on State medicine, at the Atlantic City meeting of the American Medical Association (*Journal of the American Medical Association*, June 9, 1900). The writer, together with Walter Reed and E. O. Shakespeare, were appointed to examine into the causes and existence and spread of typhoid fever in the national encampments. They conclude that every regiment in the United States service in 1898 developed typhoid fever. This was true both of the volunteer and regular commands. More than 90 per cent of the volunteer regiments developed typhoid fever within eight weeks after assembling in the State encampments, and all of the regular regiments in less than eight weeks. Typhoid fever not only appeared in every regiment in the service, but it became epidemic both in the small encampments of not more than one regiment and in the larger ones consisting of one corps. This was true in the North as well as in the South.

The investigations confirm the doctrine of the specific origin of typhoid fever. The writer discusses the chances of infection, which he says are almost certain, stating that it is scarcely possible that 1300 men could be assembled in any section and kept in camp, the sanitary conditions of which were perfect, without one or more cases of typhoid fever developing. This certainty of a sporadic origin of this disease in camp is due to the universal dissemination of typhoid throughout the country. The disease once started, the conditions of camp life favor the spread of an epidemic. This is due to the greater difficulty of disposing of the excretions in camps. The greatest sanitary sin of the troops in 1898 was the pollution of camps, though some camps were unwisely located, and the space allotted to some regiments was inadequate. Many commands were allowed to remain on one site too long. Requests for change in location were made by medical men and were not always granted, and the writer recommends earnestly that greater authority should be given medical officers in matters relating to the hygiene of camps.

The number of typhoid fever cases in a general way bears a close relation to the method of disposing of the excretion. The tub sys-

tem, as well as that of the regulation pits, is condemned. It is recommended that, in permanent camps where water carriage cannot be secured, all fecal matter should be disinfected and then carried away from the camp. Flies undoubtedly serve as carriers of infection, but infected water was not an important factor in the spread of typhoid fever in the national encampments. Personal contact was a probable means of infection, and it is possible that air in the form of dust may have contributed somewhat to its spread. A command badly infected with typhoid fever does not lose the infection by change of location, as the specific germs of the disease are carried in the bodies of the men and in their bedding, clothing, and tentage. Not only must the command have its location changed, but there must be a thorough disinfection of all the camp equipment. About one-half of all the cases of typhoid fever were incorrectly diagnosticated. This failure to recognize many of the cases was in part to be attributed to the early removal from the regimental to the division hospital, and from there to the general hospital. The percentage of deaths among the cases of typhoid fever was about 7.5.

The writer states it as his belief that from one-fourth to one-third of the men in a regiment are susceptible to the disease, and it disappeared only after the susceptible material had been exhausted. Their investigations do not support the view that errors in diet or gastrointestinal disturbances predispose to typhoid fever, as more than 80 per cent of the men who developed typhoid fever had no preceding intestinal disorder. The deaths from this fever alone amounted to 80 per cent of the whole mortality.

A Study of Experimental Appendicitis.—

C. H. Frazier (Contributions from the William Pepper Laboratory of Clinical Medicine, 1900) gives a series of experiments made upon the appendices of rabbits. The first group of these consisted in the application of a ligature to the appendix which would occlude the lumen but did not exercise heavy pressure upon the walls nor cut off the blood supply. This interference was always followed by a uniform reaction. At the end of a week's time the cavity of the appendix was found to be more or less distended with a mucopurulent secretion. Mechanically obstructing the outlet of the organ produces a suppurative appendicitis. There has been a disposition of late to ignore cæcal conditions in their relation to appendicitis. The writer thinks that inflammation of the cæcum in man may easily lead to such inflammation and swelling as to cause appendiceal involvement, with the secondary development of abscess. He

was unable to experimentally determine this in rabbits, as in these animals the opening of the appendix is too wide. He says that experimentally the theory of the causation of appendicitis by the conversion of the appendix into a closed cavity is demonstrated beyond question.

A second series of experiments was then performed to ascertain the effect of foreign bodies. These were found to produce no changes unless they were of sufficient size to occlude the lumen of the appendix. In his experiments the foreign bodies were in every instance expelled into the cæcum in the course of time, no matter how firmly engaged in the passage.

The effect upon the contained microorganisms when the appendix was ligated was to enormously increase their virulence. The bacillus coli communis was uniformly found in the intestine of the rabbit and also in the appendix, but seemed to be quite devoid of virulent properties, excepting in those cases in which the appendix was ligated; in the cavity thus formed this organism rapidly became virulent. An effort was made to determine the relation of inflammation of the appendix to virulent inflammation, without separating the appendix from the intestinal tract. This was done by cauterizing the mucous membrane with nitrate of silver, but the results were negative. The results were negative also as to the relation of the foreign body to the virulence of the bacillus coli communis.

The effect of ligation of the artery and vein at both distal and proximal ends was very pronounced. On the ninth day the appendix was distended to twice its natural size and contained a purulent secretion; the mucous membrane had ulcerated in places. When the artery alone was ligated, the effect was less striking. The isolation of the vein from the circulation was not attended by demonstrable lesions.

From this experimental data the author offers the following conclusions: "Of all the etiological factors that enter into the pathogenesis of appendicitis, imperfect drainage of the organ plays the most conspicuous part. Whenever this is present, and exists for only a brief period of time, there are bound to arise very definite and at times serious consequences. As a result of the interference with drainage, the bacillus coli communis is changed into a virulent organism. Next in importance to the part played by insufficient drainage and increased activity of microorganisms is the question of circulatory disturbances. The insignificance attached to the presence of foreign bodies in the human appendix was well borne out by the experimental work."

Mirror Writing.—

Arthur Sweeny, in the *St. Paul Medical Journal* for June, 1900, says that most cases of mirror writing have been regarded as freaks, and hence have not been seriously studied. Twenty years have elapsed since the first cases were described. He reports the case of a 13-year-old girl of Swedish nationality. The patient came from a neurotic family. Poor health kept the girl from attending school until she was eight years old. After beginning her pupilage progress was excellent in every way except writing, in which branch her efforts seemed well-nigh hopeless. She had always been right-handed. When first attempting to write her teacher could not decipher what was written, but careful observations showed that while the writing did not resemble the copy, there was a considerable degree of uniformity, and the letters were always formed in the same way. It was found by inverting the copy that it could be read in the mirror—that is, the copy was written backward, as well as inverted. This peculiar chirography was to the pupil's mind an exact copy of the text set upon the blackboard, and she passed in her work to the teacher, unconscious that it was not the same as the task that was set. This writing was done with the right hand, the paper being in the usual position and the pen held as children ordinarily hold it. It required months of patient endeavor to overcome this defect and to make her write in the usual manner. She always labored under the burden of this peculiarity, and her progress was necessarily retarded. A defect in vision was corrected, after which progress was more rapid.

A later examination of this girl showed that while wearing her glasses she wrote normally in a free, clear hand. When asked to write in mirror writing she did not know what was meant, nor could she write in any other way than normally. When asked to copy some mirror writing, she did it crudely, clumsily, and could not read it. With her glasses removed she was asked to copy the name of her teacher, Miss Blackman. She began with the last letter of the name, writing from right to left, forming the letters correctly, but reversing their order. When asked to point out the beginning of the copy on the board, she placed her finger on the letter "n." A number of experiments demonstrated conclusively that there was a complete reversion of perception. A church to her showed the spire on the wrong side of the structure. A carriage which was going north she indicated as going south. An inverted cone was thought to have the apex pointing upward; similarly, a pencil held with the point toward the floor was said to have the point directed

toward the ceiling. When looking at a person's head, she reversed the profile and the back of the head. There seemed to be complete inversion of vision, both vertical and horizontal.

The Causes of Pains in the Feet.—

C. A. Hamann, in the *Cleveland Medical Gazette* for May, 1900, has an exceedingly interesting article on pains in the feet, which is of especial value from a practical standpoint. He groups together some of these causes, giving the leading facts, but excludes those which are marked by conspicuous alterations, such as tumors, tuberculosis, etc. He refers briefly to rheumatic inflammations and to gout. Gonorrheal rheumatism is carefully considered, and he shows how difficult it is to make an exact anatomical diagnosis of the particular joint which is involved. This may be impossible where there is considerable swelling and involvement of the sheaths or tendons.

The term "achillodynia" was applied by Albert to cases in which there was pain upon pressure over the insertion of the tendo Achillis without apparent cause. These cases are now recognized as due to an inflammation of the bursa between the tendon and the bone, and may be due to trauma, friction, badly fitting shoes, or infection. Fournier and Jacquet claimed that gonorrheal periostitis of the os calcis is quite frequent, but it is probable in these cases that the affection is primarily of the bursa.

The "painful subcutaneous tubercle" of the older writers is met with in the sole of the foot, as well as various forms of neuritis affecting the plantar nerves. Neuritis is generally characterized by pain of a burning character, and paresthesia is complained of. The diagnosis of plantar neuritis is based largely upon tenderness of the nerve trunks when pressure is made over them.

Flatfoot is one of the common causes of pains in the feet, and is frequently overlooked. It is important to examine carefully the plantar arch in all cases. Pain may accompany flatfoot from its beginning, or it may be excited by a twist or sprain. The degree of the deformity is not always related to the amount of pain. There are usually certain points which are tender upon pressure. One of these is over the calcaneo-navicular ligament which supports the head of the astragalus, and is subjected to stretching in flatfoot. Pain is often felt below the internal malleolus and anterior to the tibiotarsal articulation, and at the bases of the metatarsal bones. Rotating or twisting the foot unawares usually increases the pain.

What is known as intermittent limping, a condition which comes on after walking and which is accompanied by certain sensory and

vasomotor disturbances, is a not infrequent condition. This is thought to be due to an obliterating endarteritis, involving the smaller arteries of the leg and foot.

Reflex pains in the feet are sometimes noted in the course of other diseases, such as vesical calculus, diseases of the neck of the bladder, the prostate, and sometimes in uterine and ovarian disease.

Changes in the Vessels and Vascular Coats of the Eye in General Diseases.—

G. E. de Schweinitz, in the *Maryland Medical Journal* for June, 1900, says that the conjunctival congestions which have been described by Jonathan Hutchinson as characteristic of masked gout are usually confined to one eye. The conjunctiva becomes red, and the eyeball feels hot and pricks as if it contained sand. The attack may come on within half an hour of the meal which has disagreed, and it may last for a few hours or a day or two. He thinks that the elaborately recorded fugacious periodic episcleritis of Fuchs is the same disorder. In this the congestions come on rather suddenly and present themselves in the form of patches of hyperemia of the sclera and overlying conjunctiva. They may have a violet hue, and are associated with burning and itching. Whatever explanation is offered to account for these symptoms, the writer thinks they are often an indication of vascular changes deep in the ocular coats, which in their turn are significant of wide-spread arterial changes throughout the body. Subconjunctival ecchymoses belong to the same order of phenomena and usually occur in patients past 40. Sometimes they are a forerunner of nephritis. Three out of five recently observed cases have died within three years of the first development of these subconjunctival hemorrhages. Hemorrhages of this character occurring in elderly people are indicative of ordinary angiosclerosis, but are by no means confined to old people. They may occur in persons not much over 40 and apparently in good health. There may be an absence of the signs of arterial degeneration as commonly found in the radials or temporals. One patient to whom the writer refers scouted the idea of the necessity of an examination of the urine, although he had had three spontaneous subconjunctival hemorrhages, all of them disappearing quickly, within three months.

The ophthalmoscopic signs found in general arterial sclerosis are: Alterations in the wall and caliber of the retinal arteries, as shown by an undue tortuosity, or alterations in the caliber of the vessels, shown by alternate contractions and widenings. The central light

streak is increased and the entire breadth of the artery has an unusually light color. In a measure they lose their translucence, so that it is impossible to see an underlying vein at the point of crossing. There is also undue tortuosity of the veins, but this alone is not significant except in the presence of other disease. The veins also present alternate contractions and dilatations. Old age alone does not produce these changes, as people 70 and 80 years of age may have healthy looking vessels. They may not be present in advanced atheroma in other portions of the circulatory apparatus.

Malaria and Mosquitoes.—

An editorial in the *Medical Record* of May 12, 1900, has a quotation taken from the recent book of instructions issued by the Liverpool School of Tropical Medicine. It says that all speculations about our soil and "malarial belts" and the like have been rendered obsolete. Malaria always gains access to the human body through bites of the Anopheles mosquito. The ordinary gnats which infest the regions free from malaria are not to be mistaken for the Anopheles. If this particular insect could be destroyed, there is every reason to believe that malarial fevers would disappear. It is hoped that further experiments will show that the problem of their destruction is not so difficult as it would seem The eggs are laid in water, where the larvæ live for about a week before they assume the mosquito form. As larvæ, they rise to the surface to breathe, and a film of oil on the surface will speedily suffocate them.

The full-grown mosquito lives for many weeks, but is not presumed to travel far, and probably always obtains its food within easy reach of its native pool, to which it periodically returns for the purpose of depositing its eggs. Much may be done by drying pools in the vicinity of houses, or by treating them once a week with a light film of kerosene oil. The true Anopheles in resting has its body almost at right angles to the surface upon which it is placed, while the comparatively harmless gnat rests with its body parallel to the surface, or even inclined to it.

A further experimental study is referred to in the same journal, which, it is to be hoped, will furnish additional knowledge of the mechanism of malarial infection. Drs. Sanborn and Low, of the London School of Tropical Medicine, will begin a summer residence in a place in the Roman Campagna, where estivo-autumnal malaria is prevalent. They will live in a small wooden building with windows and doors protected by wire screens. During the daytime, or

when the Anopheles mosquito does not bite, they will go about at will, but from a little before sundown to some time after sunrise they will keep strictly within doors, though still exposed to the soil and air emanations. Their drinking-water will be the same as that used by other residents of the Campagna, and all their conditions of living will be the same, save that they will be protected from the stings of night mosquitoes.

The Toe Phenomenon of Babinski.—

G. L. Walton and W. E. Paul, in the *Journal of Nervous and Mental Diseases* for June, 1900, have a very extended study of this phenomenon, based on 700 examinations. The authors' conclusions are that in health one of several conditions may follow stimulation of the plantar reflexes: (1) Flexion of all toes; (2) flexion of some, generally the outer toes; (3) flexion of all toes on one side, and of some, generally the outer, on the other; (4) the entire absence of movements on both sides, noted in about 10 per cent of cases; (5) flexion of all or of some, generally the outer, toes on one side, with absence of movement on the other; (6) in sensitive individuals there are occasional quick, semivoluntary movements, sometimes of flexion and sometimes of extension. In early infancy no constant or characteristic movements of the toes appear, though extension is rather more frequent than flexion. The toe phenomenon is found in about 70 per cent of hemiplegics and diplegics, and in approximately the same percentage of cases with the disease involving the pyramidal tract of the spinal cord.

The Babinski reflex, by which is understood a constant and deliberate extension of the great toe, with or without extension and separation of the other toes, is never present in health. The authors' observations lead them to doubt its existence in either functional or organic nervous disease not implicating the pyramidal tract. This reflex is often the first symptom to appear in pyramidal tract disease, and occurs in hemiplegics before the establishment of exaggerated knee-jerk and ankle clonus. This reflex exceptionally occurs in cases not conforming to recognized types of pyramidal disease, such as meningitis, hydrocephalus, alcoholism, and uremia. These instances are so infrequent that they do not impair the diagnostic value of the phenomenon.

A Further Communication on the Germ of Scarlet Fever.—

W. J. Class, in the *Philadelphia Medical Journal* of June 23, 1900, gives an account of his efforts to find an antitoxin for this

germ. The work was found to be very difficult because of the varying virulence of the germ. A culture was finally obtained which was satisfactory. It was taken from the throat of a scarlet fever patient the first day of the disease, before the appearance of the rash. Cultures of this germ were fatal to mice in twenty-four hours. A pure bouillon culture of the germ showed the large coccus without admixture. This culture filtered gave a straw-colored fluid, alkaline in reaction, which showed no precipitate at the end of two months. This filtrate was fatal to mice in thirty-six hours; the blood of such animals proved to be sterile post mortem. Fivé cubic centimeters of this fluid was injected into a pig weighing twenty-five pounds. The first injection was followed by a marked reaction, the temperature reaching 103°. At the fourth injection there was only a rise of one-half degree, and the reaction being comparatively slight the pig was thought to have been immunized. The animal was then bled and thirty minims of a 40-per-cent solution of formalin was added to eight ounces of blood, which was put into a cooler for forty-eight hours. The serum obtained was a clear reddish fluid. In testing the antitoxic properties of this fluid, mice were found to be too susceptible, while white rats were naturally immune. Guinea-pigs were found to be most satisfactory. Four experiments were given upon guinea-pigs, which seemed to demonstrate an antitoxic power in the serum. In closing, the writer reaffirms his belief that the diplococcus scarlatinæ is the cause of scarlet fever, although he admits that much work must yet be done before this view will be generally accepted by the profession.

Congenital Word Blindness.—

James Hirshelwood, in *The Lancet* of May 26, 1900, describes two cases under the above heading. They were both boys, one aged 10 and the other 11 years, in whom the defect seemed to be exactly alike, although one of the cases was somewhat more marked than the other. The writer explains the origin of the trouble as a congenital defect in the visual memory and the power of acquiring words. The first patient was so far defective in this respect that for four and a half years at school he had not acquired the visual memory of all the letters of the alphabet. The contrast between his visual memory for words and letters and the auditory memory was very striking. He had not been able to learn or recognize by sight the letters and words in his little primer, but he could repeat the contents of the book by heart. He could repeat the alphabet correctly and rapidly, but he could only recognize part

of the letters by sight, and that often after many mistakes. He could spell rapidly and correctly all words of one syllable, but could not recognize them by sight. The failure of visual memory was for letters and words only, and did not extend to objects and persons; pictures of all kinds were recognized at once. The visual memory for figures was found to be less defective than that for words. The writer cites two cases described in the literature, which makes four in all, of congenital word blindness that he has been able to locate. This paucity of literary reference does not affect the prevalence of the defect, which he thinks is not at all uncommon. Many of these cases are classed as imbeciles or incorrigibles, and the true recognition of their defect would lead to its being in a measure overcome by patient and persistent training.

Incubation Period of Plague.—

F. G. Clemon, in *The Lancet* of May 26, 1900, says that the term incubation period is often employed in an indefinite way, but it should be held to cover that period when the organism gains access to the tissues at the onset of the symptoms of the disease. In this sense it is probable that the incubation period of most infectious diseases is comparatively short. In many instances it is employed to indicate the period between the exposure of the patient to the infection and the onset of the disease. A person may be exposed to the disease and carry some of the infectious material away with him, which may not gain access to his system for days or weeks, and it is probable that this is the explanation of prolonged periods of incubation, which are often described in the literature.

The author gives a *résumé* of the studies which have so far been made upon this subject, the most definite of which are the descriptions of cases in which inoculation was made directly to the tissues of a patient at a necropsy. Several of these are on record, but the incubation period is invariably short, rarely more than two or three days, and it is shorter than when the disease is contracted by the ordinary methods of infection. In the majority of cases it is impossible to know at what moment the virus enters the tissues of the patient. For practical purposes it is generally agreed that the maximum incubation period of plague is from ten to twelve days.

Preventive Inoculation Against Typhoid Fever.—

A. G. R. Foulerton, in *The Lancet* of June 2, 1900, gives a *résumé* of the present status of antityphoid inoculations. The value of these cannot as yet be stated, as so little time has elapsed since they were commenced. The first inoculations upon a large scale

were made in the midst of an epidemic three years ago. In this epidemic the inoculations were given to 130 persons of the medical staff, nurses, and attendants of the Maidstone Asylum. None of those who were inoculated contracted the disease. Professor Wright, of the Royal Army Medical School, who has done the most in this direction, recently reported 2835 inoculations. These were in a body of troops numbering 11,295 men. The percentage of cases of typhoid among the inoculated was 0.95, while among those not inoculated it was 2.5 per cent. These figures are in favor of the inoculations, and it is said that they would have been much more marked if it had been possible to distinguish between those who were "inoculated" and those who were "successfully inoculated." The methods in present use are unsuccessful in a certain proportion of cases, and the only way of determining the value of the protection is in testing the agglutinative reaction of the inoculated person's serum. Protection is ordinarily due about six days after the inoculation, and so far as present figures may be relied upon, it is believed that the protection lasts about two years. The after-effects of the antityphoid inoculation may be at first unpleasant, and it is not suggested that it should be employed generally, but only with those who may be especially liable to the risk of infection. The unpleasant effects, however, are only temporary.

Diffuse Amyotrophy Following Slight Traumatism.—

G. Ballet and Henry Bernard, in the *Archives Générales de Médecine* for May, 1900, describe six cases of diffuse muscular atrophy following slight injuries to the extremities. The clinical study of these cases leads them to the conclusion that there is a special form of muscular atrophy which follows superficial lesions of the skin, and exceptionally those of the joints. This atrophy affects all the muscles of the extremity, usually does not reach a great degree, amounting to only three or four centimeters in the circumference of the extremity, and is not accompanied by a reaction of degeneration. This syndrome is not to be confounded with an ascending neuritis or a degeneration of the axis cylinders, and is probably associated with changes in the ganglion cells of the anterior horn.

Symptomatic Diagnosis of Valvular Obstipation.—

T. C. Martin, in the *Medical Fortnightly* of June 25, 1900, says that by obstipation is meant sluggish or delayed bowel movements, due to organic obstacles. The normal rectal valve beneficially retards the descent of the bowel contents, but under other than normal conditions it forms an obstruction. The symptoms are

largely determined by the position of the obstruction. If below the rectosigmoid juncture, the symptoms are straining at stool. If at the rectosigmoid juncture, tenderness and a sense of fulness is felt in the left iliac fossa and lower abdomen; the stools are at long intervals, and the passage is not accompanied by straining. If two rectal valves are so situated that their borders overlap, this forms an almost impassable barrier to the descent of the contents of the bowel. Such obstructions occur quite suddenly and are initiated by a sense of aching and moderate heat in the sacral region, by aching extending down the thigh, and by discharges of a small amount of viscid mucus.

A New Method of Determining the Limits of the Stomach.—

M. Queirolo (abstract in *La Presse Médicale*, May 23, 1900) has devised a method of accurately outlining the size of this organ. His instrument consists of a stomach-tube containing a stylet which is connected with a pen. When this apparatus is introduced into the stomach containing some air, percussion over the stomach communicates a vibration to the pen which may be graphically recorded on a revolving drum. The writer has made a large number of experiments, and he claims that an accurate outline of the organ can be obtained in this manner, and it is quite as efficient in delimiting the pylorus as at the cardiac extremity.

SURGERY.

Detection of Abdominal Calculi by the X-ray.—

W. B. Coley has an excellent *résumé* in Progressive Medicine (June, 1900) of the present status of this method of diagnosis. The ease with which various calculi are detected by the *x*-rays depends upon their composition. Those composed of calcic oxalate interrupt the rays and furnish a deep shadow; those composed of phosphates give a less distinct shadow; while those of uric acid are still fainter. Ringel last year stated that the presence of calculi in the kidney could only be demonstrated by the *x*-ray if they were composed of calcic oxalate. While the difficulties and uncertainties of the method were very great, he believed that Roentgen's method should be tried in every case, but the absence of shadow which could be identified was not to be considered evidence of the absence of stone. While the success of Ringel was not marked, Taylor and Fripp were able to locate by a radiograph a renal calculus which had escaped detec-

tion by a lumbar nephrotomy. In their case symptoms of calculus had lasted for nine years. After the stone was located the operator was compelled to resect a portion of the twelfth rib before it could be extracted.

C. A. Morton, in 1898, removed an oxalate stone, three-fourths by one-half inch, from the left kidney of a boy aged 12 years. Its position was definitely shown in two radiographs. The patient had suffered from intermittent attacks of pain and hematuria for a year previous.

Abbe, in 1899, was able to locate, by radiograph, a stone whose greatest diameter was half an inch. The time of exposure was one minute, and the stone was composed of calcic oxalate.

The writer says that the future of this method of diagnosis is by no means settled. With improvements in technique it is reasonable to suppose that there will be an advance in this method of diagnosis. American observers have been especially successful along these lines. Most workers have used too long exposure. This makes little difference with an impervious object such as a bullet, but when a substance such as a calculus is searched for, whose penetrability is only slightly less than that of muscle or kidney, it is essential that the exposure should not be too long.

Leonard pointed out nearly two years ago that if rays are employed that will differentiate between the shadows of tissues less dense than the least dense calculus, all calculi will be found. The production of negatives having these details is secured by the employment of a large volume of Roentgen discharge from what is known as a "soft" tube—that is, one having a low vacuum. High wattage and not high voltage is necessary to differentiate the structures of the loin. In following these principles Leonard has twice succeeded in getting a radiograph of a small calculus in the ureter near the bladder. The advantages claimed for this method by Leonard are an early diagnosis and consequent early operation, with the decrease in mortality, which is due in part to impaired renal function. The dangers of an exploratory operation are avoided. The examination of both kidneys and ureters localizes the operative interference. An absolutely negative diagnosis renders rational a non-operative treatment that would otherwise often endanger the life of the patient. Leonard's results are certainly very striking. Of fifty-nine patients examined, twelve were found to be the subjects of calculous disease. In seven cases of negative diagnosis the correctness of the results was subsequently determined.

In conclusion, the writer says that thus far no successful radio-

graphs of biliary or intestinal calculi have been published, but in view of the rapid improvements which have been made in the *x*-rays in the few years which have passed since their discovery, it would be stupid to assert that abdominal surgery has nothing to expect in this direction. It is quite within the bounds of reason to hope that by this means a diagnosis will be possible, not only of calculi of every character, but also of inflammatory lesions and tumors, and, perhaps, of intestinal obstruction.

Surgical Aspects of Constipation.—

It is only within recent years that this subject has attracted the attention which it merits. A closer investigation of the anatomical peculiarities of the sigmoid and rectum shows that there are many anomalies in these structures which interfere with the functions of the bowel in a purely mechanical way. S. L. Woolmer (*The Lancet*, June 16, 1900) describes two interesting cases of what he terms "aneurismal" dilatation of the colon, as the result of chronic constipation. Both patients were greatly reduced, due to repeated attacks of intestinal obstruction and absorption from the dilated intestinal pouches. The first case was that of a man aged 28 years, whose trouble began in 1892 with a sudden attack of constipation, a condition which continued for about three months. He was finally admitted to the hospital and some relief obtained. For the following three years his bowels were only moved by purges and enemas, and with great difficulty. Large enemas of olive oil, combined with massage of the abdomen, gave some relief. A suspicion of malignant disease being entertained, a thorough examination was made, when a distinct fulness was noted behind the bladder. In February, 1897, a laparotomy was performed, which revealed a normal intestine, excepting at the sigmoid, where a diverticulum had formed of considerable size, the bottom of which was filled with stagnant fecal matter. On further examination it was found that movements of the bowels could only be produced when this cyst was completely full, and then only by regurgitation. Fig. 1 is a diagrammatic representation of the conditions present in this case.

Another patient, 42 years of age, had suffered from constipation for ten years, but during the last year this symptom had become much worse. In March, 1897, he had an attack of acute intestinal obstruction, but without vomiting. A tumor was found in the hypogastrium at the level of the insertion of the right rectus muscle. It was globular, smooth, and painless, and presented considerable resistance. By the rectum a tumor could also be felt

descending from above, which was found to be identical with that felt through the abdomen. The tumor could be indented with the finger, the indentation remaining after the finger was withdrawn, and it could not be dislocated from the pelvis. Persistent efforts to relieve the constipation by enemas of olive oil were quite ineffectual. Every week the patient had indications of acute obstruc-

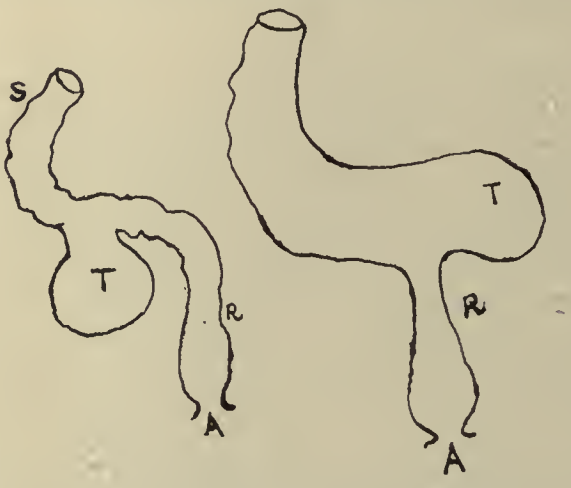

FIG. 1. FIG. 2.

S, sigmoid; R, rectum; A, anus; T, tumor formed by the pouch or diverticulum.

tion. Abdominal section was done, and the tumor found to be a large sessile dilatation of the last portion of the sigmoid flexure. The arrangement and relation to the rectum is shown in Fig. 2. Its peritoneal covering was quite normal, but somewhat thickened. No adhesions existed. It was impossible to reduce the contents of the tumor into the rectum. Recovery was uninterrupted after the operation, though enemas were necessary. On the eighth day after operation the dilated sigmoid pouch, which had been sutured to the abdominal wall, was emptied by the finger and a spoon, and its contents measured approximately three-quarters of a liter. The contents of the cavity had entirely lost their fecal character. Later the patient had his first natural and spontaneous bowel movement, and was ultimately discharged recovered.

Massage in Recent Fractures.—

W. H. Bennett, in *The Lancet* of June 2, 1900, says that the rational practice of massage is one of the best means that can be

employed in the treatment of ordinary fractures. The real difficulty in fractures begins after the bone is united. In a fracture of the leg treated in the usual way, after the retentive dressing is removed the ankle is often found to be quite stiff, and the patient complains of pain in the sole of the foot. These troubles are often avoided if massage is begun early and continued during the treatment of the fracture. Another complication of fracture is the involvement of the nerves of the leg, by which intense neuralgic pains are produced; this is prevented by the intelligent use of massage. A not infrequent complication is muscular spasm, frequently accompanied by severe pain, which is also overcome by the early application of massage.

In setting a fracture, muscular spasms may be overcome by a smooth upward movement of the hands, which grasp as much of the limb as possible. A few minutes of this manipulation will, in the majority of cases, relieve the spasm. There is nothing to interfere with smoothing the limb over the site of the fracture, providing it is done properly. The relief of the pain is, as a rule, immediate. It furthers absorption of effused blood. The massage is employed every day, and passive movements of the muscle tendons at the back of the ankle are begun at the end of the third day. These should be made by moving the toes only, at first. The extension of the toes puts the deep muscles of the calf on the stretch and prevents adhesions of the tendons and sheaths at the site of the fracture. Passive movements of the ankle should be commenced from the fifth to the seventh day. At the end of a fortnight passive movements of the knee are instituted.

Colles's fracture, it is said, may be treated with any form of retentive apparatus, providing that the anterior splint is placed well behind the base of the fingers and the retentive apparatus is removed at the end of from four to six days, the joints moved, and the part thoroughly rubbed. Voluntary movements should begin in about a fortnight, and all splints be discarded at the end of about three weeks. The author emphasizes the necessity of passive movements being preceded by smooth massage, which soothes the irritable muscles so completely that full movements can be readily carried out without exciting muscular contraction of a harmful kind. If this previous rubbing of the muscles is not employed, violent muscular action may supervene which may throw the fracture out of place and cause the patient intense pain. Massage is especially applicable in fractures about the shoulder-joint. The advantages claimed for massage in general are: (1)

The ease with which the patient is made comfortable by arresting the muscular spasm and so relieving the pain; (2) the rapid absorption of effused blood; (3) the prevention of the stiffness by obviating the formation of adhesions; (4) the prevention of muscle wasting and the preservation throughout the case of the normal nutrition of the limb; and (5) the shortening of the time in which the patient is prevented from resuming the ordinary use of the limb. The real objection to the plan is the difficulty of carrying it out. The treatment requires so much intelligence and discretion that where the practitioner himself cannot attend to it, it is difficult to get another person with whom the matter can be left.

Hemorrhage from the Stomach.—

W. L. Rodman (*Boston Medical and Surgical Journal*, June 7, 1900) chose this as the subject of the address on surgery before the American Medical Association. It was until recently regarded as a medical affection. The conditions underlying the hemorrhage from the stomach are varied, but he only considers gastric ulcer, which is the underlying condition in the vast majority of cases. Hemorrhage is said to occur in at least 50 per cent of all cases of gastric ulcer, and it is indirectly fatal in a large number of cases. Bleeding from carcinoma is rarely as free as in ulcer, the amount of blood lost being more frequent and in smaller quantities. The presence of tumor is not always conclusive in favor of carcinoma, as it may be present in benign ulcer.

The first treatment for all hemorrhages should be rest, and opium. Recurring hemorrhages should, like appendicitis, be operated on in the intervals. With two hemorrhages coming close together it is safe to assume that there will be a third attack, and if anything is to be attempted surgically, it should be when the patient is in fairly good condition and not in the collapse of hemorrhage. Enemata with water at a temperature of from 112° to 120° F., as recommended by Tripier, is useful. Hot water can do no more in internal hemorrhage than it does in external. If the hemorrhage is capillary, prompt hemostasis will follow. If, however, the vessel is of any size and the opening is situated laterally, as it usually is, it is not reasonable to expect favorable results from such treatment. There is no constant relation between the size of the vessel and the rapidity with which the blood is lost. The table of Savariaud is given, which includes the location of the vessel involved in fifty-four cases. This shows that death may be sudden in capillary hemorrhage, or may be delayed a considerable time when there is an opening of some

size in the abdominal aorta. The writer is of the opinion that this emphasizes the importance of operating before it is too late. There is now a sufficient number of cases upon record to justify the statement that better results will be secured by judicious interference. In all cases of small but frequent hemorrhages accompanied by dilatation of the stomach, operation should be undertaken. There have been thirty-one operations for these, which might be termed chronic hemorrhages, with a mortality of 19.3 per cent. Operation is not imperatively called for in acute hemorrhage. If seen when the patient is successfully rallying from shock, non-intervention should be the rule. The second hemorrhage should be followed by operation after the patient's general condition is improved.

Impacted Cerumen.—

Samuel Kohn, in the *Medical Record* of June 23, 1900, says that this condition is not as simple as it is commonly regarded by the general practitioner. It occurs in from 10 to 12 per cent of all cases of ear trouble, but there is probably a somewhat larger proportion of cases among those coming to the general practitioner. It has been claimed that every case of impacted secretion in the external ear is due to an existing or a preexisting inflammation of some part of the auditory apparatus. After the removal of the cerumenous plug, there is not that complete restoration of hearing which the practitioner and the patient confidently expect. In nearly 60 per cent of the cases of impacted cerumen there is more or less impairment of hearing after the complete removal of the plug. The symptoms of this condition may be very slight, a plug often existing in the ear for years without causing subjective sensations. Usually a fall or a blow displaces the plug, or more commonly after a bath it becomes moistened and swells so that the auditory canal is occluded, with a consequent impairment of hearing; other symptoms are dizziness and tinnitus. The prognosis as to audition should be guarded. In removing these plugs the writer recommends gentle syringing with warm distilled water which has been sterilized. While the operation is usually trifling, care should be taken in carrying it out, and if necessary the patient should return more than once. In cases in which the plug is very dry and hard, a saturated solution of bicarbonate of sodium may be dropped into the ear. This done two or three times a day for two days will usually so soften the plug that it can be easily removed by gentle syringing. After the plug has been removed, the tympanum should be dried and a small loose wad of cotton placed in the auditory canal. The tendency to accu-

mulation can be overcome by instructing the patient to wash out the ears with a mild alkaline solution—one drachm of aqua ammonia in a quart of warm water and Castile soap—once every week.

Carbolic Gangrene.—

F. B. Harrington, in the *American Journal of the Medical Sciences* for July, 1900, says that dilute solutions of carbolic acid applied to the extremities for a number of hours may produce gangrene and total destruction of the part. During the past five years he has seen eighteen cases of gangrene from this cause, in a large proportion amputation being necessary. These, added to the ones reported in the literature, make a total of 132 cases of gangrene from dilute solutions of carbolic acid. The writer thinks that the frequency of gangrene from this cause is much greater than the reference to reported cases would lead one to believe, especially as dilute solutions of carbolic acid are so often applied as a surgical dressing in a domestic way. The histories of these cases vary little from the following: A wound of the extremity is received, which is dressed in a dilute solution of carbolic acid. The strength is not always possible to determine, but it is safe to say that it is rarely stronger than five-per-cent; it is not infrequent, however, that gangrene follows a three- and even a two-per-cent solution. The finger is usually wrapped in cloth, and this is saturated with the solution. The strength of the solution has less to do with the unfortunate result than the length of the application and the thickness of the individual's epidermis. Carbolic acid kills the extremity in successive layers from without inward. At first the epidermis becomes loosened and swollen; next the subcutaneous tissues are attacked. In some cases where the application is made to a finger, the part nearest the palm will become gangrenous before the tip of the finger ceases to bleed when pricked, or loses its natural color. Gangrene does occur when these applications are made to the trunk, but it is usually superficial.

The Surgical Anatomy of Congenital Dislocation of the Hip.—

E. H. Nichols and E. H. Brightford, in the *American Journal of the Medical Sciences* for June, 1900, present a very careful pathological study of this condition. A study of their specimens shows a dislocation of the head of the femur upward and slightly forward on the surface of the ilium, with a triangular acetabulum which faces more or less directly upward. Associated with this is a diminution in the size of the head of the femur and a lessening of the angle of

the head of the shaft to nearly a right angle, and an increased angle of femoral torsion. A capsular ligament in the form of an hour-glass or a simple sac is adherent to the surface of the ilium above, and sometimes dilated about the acetabulum, constricted at the neck of the femur.

The obstacles to reduction are found in the peculiar attachment of the capsular ligament, which causes a shortening of ligamentous bands at various points. The capsule may be so narrow about its middle that it is impossible to draw the head of the bone through the constriction. In addition to the above, there may be thickening of the capsule above the acetabulum, adhesions between the capsule and the head of the femur, constriction of the adductor muscles, or an exaggerated torsion of the femur, so that when the bone is placed in its normal position the knee looks inward.

The chief obstacles to retention of the head of the femur after complete reduction are: a flattened or shallow acetabulum placed too obliquely, a decrease in the femoral head, or an extremely short neck. Dense fibrous tissue sometimes obliterates the cavity of the acetabulum. The successful treatment of congenital dislocation of the hip depends on surgical experience guided by thorough pathological knowledge.

Siphonage of the Partitioned Bladder.—

A. J. Downes, in the *Philadelphia Medical Journal* of June 2, 1900, says that in many cases he has used the Harris urine segregator, and in all cases has obtained a positive separation of the urine. It is in some respects an imperfect instrument and causes a good deal of distress to the patient. It is easy to make a mistake and lose the separation, so that an admixture from the two kidneys is obtained. The apparatus is complicated, and a suction device is required. Its caliber is too large. When using the Harris instrument he found that the suction apparatus could be dispensed with when using the instrument as a siphon. These defects led him to devise an instrument which would involve the siphon principle. It consists mainly in a double-barreled bifurcating catheter of small caliber and a partition rod which elevates the bladder wall between the catheter ends for fully two and one-half inches. The method of using the instrument is the same as that with the Harris device. The bladder is first filled with fluid, the catheter is then introduced, and the beaks separated and turned downward into each sulcus. The bladder is then washed out and the urine allowed to flow by simple siphon action. Its advantages as compared with the Harris

instrument are that it takes a much smaller caliber, is simpler, and is curved at the beak, with a longer and more certain bladder partition.

Ethyl Bromide as an Anesthetic for Throat Operations.—

P. F. Sondern, in the *New York Medical Journal* of June 9, 1900, says that ethyl bromide is used by M. Lermoyez at the Hôpital St. Antoine almost daily for short throat operations. Anesthesia is obtained in from twenty to forty seconds, and the operation is begun at the longest within a minute after the commencement of administration. The chief points in administration are to suspend at the moment when the muscles of the neck and arms relax, the eyes remain open, the pupils dilate, and the conjunctiva begins to suffuse. If this moment is passed the muscles contract and become rigid, and operations within the larynx may be dangerous. If this exact point in the anesthesia is passed the patient should be allowed to recover and the operation be attempted some other time. If administered to the proper degree, the anesthetic effect lasts for about two minutes, and the patient is almost immediately able to walk. For patients from three to sixteen years of age, this anesthetic has no equal for short operations. In older patients there may be an excess of excitement for some hours after its administration.

The fatal cases recorded can be traced to the following causes: The use of ethylene bromide instead of ethyl bromide; the use of an old solution; the use of the drug in repeated small quantities; the administration for longer than a minute.

The Operative Treatment of Perforation in Typhoid Fever.—

G. D. Davis, in the *University Magazine* for May, 1900, says that the diagnosis of perforation is not always easy. A sudden increase of pain in the abdomen associated with an abrupt fall of temperature is diagnostic of perforation. Leucocytosis is a confirmatory sign. Hemorrhage is combined with a sudden fall of temperature, but not with a sudden increase of abdominal symptoms. Dulness in the right iliac region is not to be expected in cases of perforation. It is impossible to recognize that a perforation is about to occur. It is not necessary to operate before a perforation occurs, but it is necessary to operate before collapse is marked. Typhoid fever patients, when not in total collapse, bear operation fairly well. Patients operated on in marked collapse are liable to die on the table. Washing out the abdominal cavity with hot normal solution, even if no perforation is present, seems to improve the condition of

the patient at the time of operation and to favorably influence the subsequent course of the disease. Operation should be performed as soon as a diagnosis of perforation is made, as it is less dangerous for a patient to undergo operation during the first period of depression than to wait and perhaps have collapse preclude all operative measures. In operating the incision should be made the same as for appendicitis, and not in the median or semilunar line.

Gasoline as a Surgical Detergent.—

B. L. Riordan, in the *Canadian Practitioner and Review* for June, 1900, says that in these days, when every one is aiming at surgical asepsis, detergents should occupy a prominent place in surgical practice. In his practice commercial gasoline has proved exceedingly valuable in cleansing surfaces. He has used it for four years in cleaning the field of operation and in traumatic wounds, and in the subsequent dressing of all classes of wounds, not using water or other solutions. He has employed this substance in cleansing the soiled and greasy hands of those engaged in shop work. It is in this latter class of wounds that gasoline is of especial value. The results, so far as early healing and absence of infection are concerned, have been most satisfactory. A brief report is given of comparative studies of the bacteriology of the skin scraping after ablutions of soap and water, carbolic solutions, and with gasoline. The latter was found to give relatively the most favorable results. But one caution is necessary in the use of gasoline, and that is its danger when exposed to heat. If it gains access to cavities such as the ears or eyes, it is irritating just as chloroform or ether is. As ordinarily found upon the market it is quite sterile, as the heat employed in its preparation destroys all bacteria.

Unabsorbable Sutures.—

C. H. Whiteford, in *The Lancet* of May 26, 1900, says that unabsorbable ligatures are quite freely used in uniting the abdominal wall after laparotomy and hernia operations. This use of unabsorbable ligatures seems to be based on an exaggerated idea of their capabilities of holding parts together almost indefinitely. Three weeks at the outside is the time allowed for skin sutures before their removal, but these stitches only act as sutures for this period in the absence of tension. If there is tension, they soon cut their way out or lie loose among the tissues; in either instance their further use as sutures is comparatively *nil.* A similar process occurs with buried sutures, so that in a very short time there is a collection of pieces of

knotted silk either still transfixing tissues which are firmly united, or lying loose; in either case their further presence is useless. Not every buried suture is extruded. A certain number do undoubtedly become embedded in scar tissue, while others drift away by muscular contraction. The fate of the buried silk ligature is not definitely known, but it is quite certain that they are not absorbed, even when they are absent from the place where they were introduced.

Bilateral Inflammation of Cowper's Glands, of Traumatic Origin.—

M. E. Ozenne, in the *Journal de Médecine* of May 27, 1900, describes the case of a young man, an enthusiastic bicyclist, who was thrown with considerable violence on the horn of the saddle. This was followed by a sharp pain in the perineum, which continued to increase during the remainder of the ride. At the end of a half-hour urination was very painful, and some swelling was noticed in the perineum. Later in the day urination was more frequent, but not painful. Examination showed no change in the color of the integument, but on each side of the urethra, in the region of Cowper's glands, a hard tumefaction, somewhat painful, was to be felt. The situation and the extent of the swelling in the glands was easily made out by combined palpation with one finger in the rectum and the other on the perineum. At the end of a week the swelling had decreased, the pain had disappeared, and the patient was practically well; but at the end of six weeks the glands were still perceptible by combined palpation. The patient had never suffered from an inflammation of the urethra, nor had he ever had any venereal disease.

New Mouth-gag and Speculum for Posterior Rhinoscopy.—

Marc. Paunz, in the *Wiener Klinische Rundschau* of June 10, 1900, describes an instrument which at the same time acts as a mouth speculum and tongue depressor and as an arrangement by which a curved spatula can be attached to its upper portion for holding forward the soft palate, thus facilitating posterior rhinoscopy. It consists of an oval wire frame, the lower portion of which projects backward over the tongue and the superior curve, having an indentation to which is attached a set-screw which holds the handle of the curved spatula. It has the advantage of being self-retaining, thus allowing the operator to have both hands free, one for the use of the mirror and the other to attempt any operation that may be necessary. The instrument seems to be a practical addition to the armamentarium of the rhinologist.

Aqueous Extract of the Suprarenal Gland.—

L. S. Somers, in *Merck's Archives* for June, 1900, says that the non-toxic character of this product makes it peculiarly applicable in the treatment of congestion and inflammation of mucous surfaces. No deleterious effects are noted, even when 50 to 100 grains is placed in the nasal chambers. Not only is it harmless in itself, but it to a marked extent prevents the toxic effects of cocaiue. The chief objection to the practical use of the extract is the difficulty of obtaining a solution that will retain its full power and remain sterile. The aqueous solution is made by macerating ten grains of the desiccated gland in one drachm of sterile water for ten minutes, and filtering. Such a solution can be used for from twenty-four to forty-eight hours. If glycerin is added to such solution, it will prevent putrefaction for several days. The activity of the extract is not impaired by prolonged boiling, and it may be repeatedly sterilized in this manner. A useful formula that will remain unchanged for from four to five weeks is that recommended by Ingals:

Adrenal gland	15 grains.
Boric acid	4 grains.
Cinnamon water	1 drachm.
Camphor water (hot)	2 drachms.
Boiling water	q. s. ad ½ fluidounce.

Macerate four hours and filter.

Such a solution is useful in mild congestions to reduce swellings and to contract the peripheral arterioles, but it cannot be depended upon to control hemorrhage or subdue inflammation. When more pronounced effects are desired, as well as in hay-fever, the following formula should be employed:

Adrenal gland	20 grains.
Phenic acid	2 grains.
Encaine B	5 grains.
Distilled water	2 drachms.

Macerate ten minutes and filter.

This solution is permanent, will not decompose, nor lose its physiological activity for several months. Adrenal used alternately with orthoform is of value in hay-fever with painful congestions and eroded surfaces of mucous membranes. The adrenal has no effect excepting on the vessels, whether the tissue is inflamed or normal. Its action is upon the small arterioles aud the basement membrane. The drug has no local anesthetic power, but it greatly increases the

effect of other local anesthetics by retaining them in the tissues. The writer believes that the extract acts directly upon the muscles and not through the nerves.

The Effects of Treatment of Leucemia upon the Blood.—

A. E. Taylor (Contributions from the William Pepper Laboratory of Clinical Medicine, 1900) gives the results of a study of sixteen cases of leucemia, five of the lymphatic type, two of which were acute, and the remainder of the leucocytic type. Of these, eight cases were studied during treatment running through periods of from three months to one and one-half years. In all cases the treatment consisted, apart from hygienic and general measures, in the employment of large and increasing doses of arsenic. Three of the cases also received bone-marrow of calves in glycerin emulsion. No blood changes could be found in these latter cases in any way differing from those seen in patients taking arsenic alone. In one case arsenic in addition to bone-marrow gave an improvement that arsenic alone did not bring about. The use of large doses of arsenic tends to diminish the number of leucocytes and to augment the number of red cells. An improvement in the subjective symptoms does not always coincide with the beneficial effect of arsenic upon the blood. Some patients taking arsenic improve wonderfully in symptoms without obvious changes in the blood. Other cases, again, present a marked increase in the red cells and a notable reduction of the leucocytes, and at the same time are more wretched than before. In some subjects the improvement in the blood and in the symptoms go hand in hand. In many cases the arsenic has no action upon either blood or symptoms. The effects upon the red corpuscles are usually less marked than upon the white, but such unstable effects as are sometimes observed in pernicious anemia are not seen in leucemia. Even in cases apparently cured, the red cells never reached the normal, except in one case during a limited period. The excessive number of nucleated cells may become reduced, but they are never absent, even in cases which are symptomatically cured. There is no regularity in the effect of arsenic in individual cases. In some it may cause a marked reduction in the white cells when first given, and later there is no effect; more frequently, the remedy must be given in large doses for a considerable time before having any effect. It is these latter cases that improve the most. Arsenic does not seem to act on the degenerated cells especially, but only limiting the number of leucocytes as a whole. In three of the author's cases complete subsidence of the leucocytosis was

obtained; of these all relapsed twice, and one relapsed three times. In all of these cases the degenerative changes in the leucocytes were present until after the number of leucocytes had fallen below six thousand, when the abnormal forms gradually disappeared.

Electrical Treatment of Exophthalmic Goitre and of Simple Chronic Glaucoma.—

N. E. Valude, in the *Journal of Eye, Ear and Throat Diseases* for June, 1900, claims to have found a solution of the difficulties in the treatment of these conditions by the employment of galvanic currents of high intensity. As strong a current as can be comfortably borne is applied through the positive pole along the whole length of the cervical sympathetic. The negative pole is connected with an ordinary electrode of about 300 square centimeters, which is applied to the nape of the neck. The positive pole is connected with a tongue-shaped electrode, eight or ten centimeters wide. This electrode is covered with the usual chamois skin and protected with a layer of cotton-wool. After carefully soaking in hot water, it is applied parallel to the anterior border of the sternomastoid muscle, in such a way that the cotton will lie in the groove extending from the jaw to the sternal notch. It is retained in place by a bandage applied lightly. About fifteen to twenty milliamperes of current is then turned on, the duration of the application being governed by the intensity of the current. Each treatment should be from fifteen to twenty minutes in length. The current in each instance is turned on and off gradually.

In glaucoma this treatment is quite sufficient, but in cases of exophthalmic goitre it should be combined with faradization of the orbicular muscle of the lid, and also with the application of the faradic current over the heart at the apex. This method of treatment the writer terms intensive galvanization of the cervical sympathetic. He gives a number of cases in which there was marked symptomatic improvement in both glaucoma and Basedow's disease by the employment of the method. He thinks it should be employed in every case before surgical measures are undertaken.

Treatment of Membranous Colitis.—

W. H. Thompson, in the *Medical News* of June 2, 1900, has an article dealing with this very troublesome affection. The first indications are to relieve the colonic symptoms proper. This is best done by free irrigation of the colon with normal saline solution, to which is added oil of peppermint, five drops to the pint. Three

to five gallons of the fluid should be employed, at a temperature of 100° F. This may be used as often as once in twelve hours, and the relief afforded by the irrigations is very great. Care should be taken that all fluid is returned, as any that is retained will simply excite peristaltic movements and increase the pain. By such irrigation mucus is dislodged, and after it there may be a painless movement of the bowels. At the end of the irrigation a gallon of water, in which from sixty to one hundred grains of resorcin has been dissolved, may be used, and once a week a pint of clean hot water containing from thirty to forty grains of silver nitrate may be employed.

Castor oil in what the writer terms alterative doses is the best remedy in this condition. He prescribes it in the form of an emulsion in which each tablespoonful contains from one-half to one drachm. This is given three times a day after meals and is continued for months, the only contraindication being where it increases the patient's dyspeptic symptoms. Nitrate of silver in quarter-grain doses combined in pill or capsule with nine grains of turpentine resin, given three times a day, is sometimes of service. That the turpentine may dissolve and not pass the bowels unchanged, it should be well pulverized with licorice powder and a drop of liquor potassæ added to each capsule. In dieting these patients, beans, corn, spinach, and the woody vegetables, along with oatmeal, should be excluded. The patient should be encouraged to partake liberally of meat, poultry, eggs, kumiss, and most cereals.

Drugs Containing Iodine in the Treatment of Chronic Purulent Otorrhea.—

C. L. Felt, in the *New York Medical Journal* of June 23, 1900, says a discharge from the ear should be carefully treated, not only because of the complications, such as mastoid disease and cerebral abscess, that may follow, but also for the reason that the efficient and early treatment of these cases will often preserve a considerable degree of hearing. The indications in suppurating ear are to improve the drainage, increase the vitality of the tissues, and render the septic material less active. In cases in which the discharge is profuse, the ear should be syringed two or three times a day with a warm two-per-cent solution of carbolic acid. Every day, or every other day, the ear should be mopped dry with absorbent cotton and an antiseptic dusting powder should be blown in by the physician. The "dry treatment," as advocated by Burnett, commonly cures the patient in about one-sixth the time required by

other methods. The writer makes it a rule to omit solutions as soon as the discharge is slight. In the application of the dry treatment the iodine compounds are by far the most efficient. Among the best of these is iodoform, but the odor makes it somewhat objectionable. The powder which has given the writer the most satisfaction is one that is known as iodomuth, a bismuth powder containing 25 per cent of iodine. It is odorless, impalpable, and reddish-brown in color; it does not pack in the ear. He has found this drug to be of more service than any other, though he has tried boric acid, iodoform, aristol, and nosophen. The iodine it contains is sufficient to stimulate sluggish tissues and to destroy microorganisms. It is a deodorant, and the bismuth which it contains has a sedative action.

Bromides in the Treatment of the Opium Habit.—

Archibald Church, in the *New York Medical Journal* of June 9, 1900, speaks of the use of bromides in the treatment of the opium habit, which was first advocated by MacLeod. It seems that this observer stumbled on the treatment by accident. A patient who had been addicted to the morphine habit for nine years was accidentally given two and a half ounces of sodium bromide, which was followed by prompt relief of the craving for morphine. Acting upon this hint, it was given deliberately to other patients in large doses, and was stated by MacLeod to be without danger.

Church says there is danger of aspiration pneumonia, and a weak heart or impaired pulmonary conditions should preclude the use of the remedy. Bromide of sodium in large doses acts harmfully upon the kidneys; therefore nephritis should be a contraindication to this line of treatment. Three deaths have occurred in twelve cases, although in each case attributable only to the bromide. The method of administration which he advises is to give 120 grains of sodium bromide in a half tumbler of water every two hours until an ounce is given during the first day. The next day a similar amount is given in the same way, and this may be sufficient, or it may be necessary to repeat the dose on the third day. It is to be remembered that bromide acts in a cumulative manner. After the second or third day, when the bromide is withdrawn, drowsiness, in some cases actual coma, tends distinctly to deepen for forty-eight hours, so that the fully developed sleep presents a rather alarming condition to one not familiar with it. For two or three days there is difficulty in feeding, and swallowing is sometimes impossible, so that rectal alimentation is required.

Hypnotic Action of Apomorphine.—

C. J. Douglas, in *Merck's Archives* for June, 1900, says that apomorphine is a prompt and most infallible hypnotic, if injected subcutaneously in doses of one-thirtieth of a grain. For some patients such a dose is too large, and may cause nausea, while in others a larger amount will cause no disagreeable symptoms. The dose should be adjusted to induce sleep and avoid nausea. He has found it useful both in mild insomnia and in severe delirium, it commonly producing sleep in from five to twenty-five minutes. On awaking, none of the unpleasant symptoms which usually follow morphine are noted. It should be given when the patient is in bed or quite ready for bed. The hypnotic action appears to last from one to two hours. There are no cumulative effects; hence it may be given at frequent intervals without harm. The writer has determined that there is an antagonism between boric acid and apomorphine. If this antiseptic is employed, it completely neutralizes the hypnotic action of the latter drug. He has had an extended experience with the use of the drug as a hypnotic, having used it in over 300 patients, and has noted but two or three instances in which it did not exercise its hypnotic effect. There are a few patients who have an idiosyncrasy, the drug producing a marked effect in exceedingly small doses. The advantages which he claims for the drug are safety, promptness, certainty of action, refreshing and natural character of sleep, and no danger of addiction.

Hedonal.—

A. Schuller gives a clinical study of hedonal, a new hypnotic recommended by Dresser, in *Wiener Klinische Wochenschrift* of June 7, 1900. Hedonal is described as a methyl-prophyl-carbonol-urethan, which occurs in the form of white needle-like crystals. It is soluble in dilute alcohol, and is given in from ten- to twenty-grain doses. Schuller employed the drug in twenty-one cases. In five of these the results were negative; two of the cases were neurasthenia, one melancholia, one was senile and the other acute anemia. In seven cases the results were uncertain, and in nine the results were excellent. These included cases of hypochondria and hallucinations. Where sleep was produced, it commonly began in from fifteen minutes to one and one-half hours, and the duration of the sleep varied from four to nine hours. The sleep did not differ from the natural, and was only occasionally accompanied by dreams.

Dionin in the Treatment of Cough.—

J. W. P. Smithwick (*Merck's Archives*, June, 1900) has used this drug as a cough remedy in thirty cases—twelve of chronic bronchitis, seven of phthisis, three of whooping-cough, and eight from various ill-defined causes. He is of the opinion that dionin occupies a place midway between morphine and codeine, and he has found it exceedingly valuable when combined with other sedatives. It is free from many of the unpleasant effects which attend the use of morphine, such as nausea and head symptoms. It also seems to be free from any effect upon the digestive tract, and never causes constipation. He has found it especially valuable in coughs occurring in children where the administration of morphine would be very objectionable. He has not observed a tendency to addiction, even where the drug is continued for a long time. It is inferior to morphine for the relief of pain.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

The Three Symptoms of Rickets.—

W. N. Berkeley, in *Pediatrics* of June 15, 1900, says that for all the familiarity of the profession with this disease, there is still a certain haziness in respect to many of its symptoms; many diseases masquerade under other names, which are really rickets. One of the most constant symptoms of rachitis is the costal "rosary." The typical distribution of the costal nodes is well shown in Fig. 1. They are sometimes missed because the examiner forgets that in the child the osseo-cartilaginous junction of the ribs is farther by an inch or two from the median sternal line than in the adult. Instead of a genuine node, occasionally only an angle made by the bending of the softened rib is to be found. Tumefaction is sometimes well marked on the interior and absent on the exterior surface of the rib. This will rarely occur without the presence, at least in certain of the ribs, of the characteristic angle.

The typical rickety cranium is illustrated in Fig. 2, a case which was complicated by tubercular meningitis, and which shows also the characteristic "boat belly" of the latter disease. Most noteworthy, of course, is the familiar prominence of the parietal bones, giving to the head its box-like shape. The anterior fontanel, instead of closing completely as it normally should between the sixteenth and nineteenth months, remains widely open, often having larger dimen-

FIG. 1.

FIG. 2.

sions at two or two and one-half years than it should have at the period of its greatest size in health. The sutures may also be more or less separated and the bony plates of the skull greatly thinned, or completely softened. The latter symptom (craniotabes) sometimes occurs in heads which are otherwise perfect in shape. The writer saw recently an exaggerated craniotabes of more than half the parietal bones in an infant of eight months that had been improperly fed. The baby's head was perfect in external contour. The wasting of the bones would not have been discovered if it had not been carefully looked for.

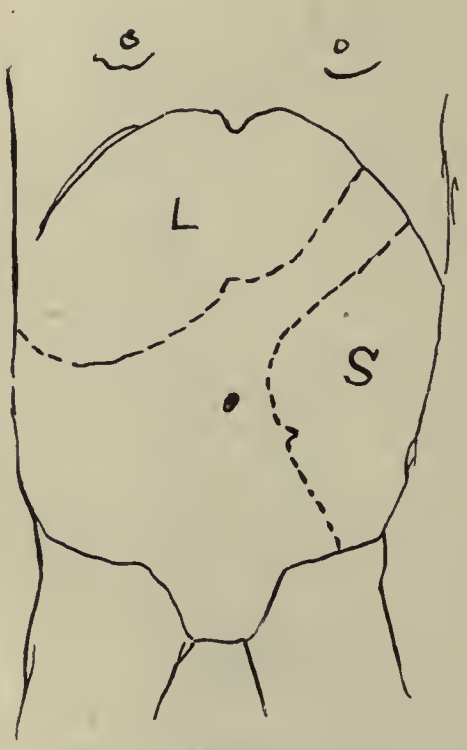

FIG. 3.

No case of rickets should be treated without a thorough investigation into the shape and size of the liver and spleen. In the first place the chronic intestinal indigestion of rickety infants furnishes toxic matter enough to cause a simple tumefaction of these organs —a swelling very similar to that occurring with catarrhal jaundice. To this the influence of the secondary anemia of rickets is super-

added. These two causes, with perhaps others due to the specific nature of the disease itself, often produce when working in conjunction a splenic and hepatic enlargement which is astonishing. Why the liver sometimes, and sometimes the spleen, should respond more readily to the causative conditions, no reason is yet forthcoming. Compared with the liver, the spleen is more apt to reach really remarkable dimensions. In the child with craniotabes mentioned above, the spleen extended much below the navel and nearly to the pelvic brim. Fig. 3 is a diagram of the abdomen of an Italian baby of seven months, from the tenement districts. The bony symptoms of rachitis were unmistakable, and the spleen was very large, dipping well down into the pelvis.

It should not be assumed that so large a spleen as this is due only to rickets until syphilis has been set aside and a careful blood examination has excluded leucemia and malaria. This child had a slight leucocytosis with differential predominance of lymphocytes. Myelocytes were absent. Normoblasts were present, but very rare —two or three to a cover. Megaloblasts were present. The red cells showed the familiar distortions of shape and anomalies of size found in advanced secondary anemia. The writer has heard of a case of rickets that was pronounced by an experienced specialist to be sarcoma of the spleen. If there be any doubt of the diagnosis, the rapid improvement of the patient upon cod-liver oil and syrup of iodide of iron will soon make the question perfectly plain.

Coccygodynia.—

B. C. Hirst, in the *University Medical Magazine* for May, 1900, has an instructive article on this affection, which he thinks has been much neglected in recent literature. Late text-books on gynecology either do not mention the affection or the description is inadequate. Within the last fourteen years he has seen ten cases in which excision of the bones was required. Of these, seven were due to injuries in labor, one to a fall, and two to a diseased condition of the joint between the first and second bones, in women who had not borne children and had not met with an accident. In addition to these ten cases he has seen a larger number in which there was temporary pain in a coccygeal joint following labor, due no doubt to a strain of the anterior ligaments, but disappearing after some months. The relation of traumatism to the development of pain in the coccyx is comparatively simple; if following labor, the anterior ligaments are ruptured or the coccyx is fractured. If due to external violence, the bone is driven violently inward and the

posterior ligaments are ruptured. After the accident the mobility of the parts prevents healing. The explanation of the origin of the trouble in women who have not borne children, or who have not met with an accident, he thinks is due to a simple sprain caused by the passage of hardened feces, or to overstretching of the ligaments from other causes. He has not yet seen a purely hysterical coccygodynia, by this meaning a case of the disease with a perfectly uninjured bone. He has not been able to identify rheumatism as a cause of this condition. Two cases that were referred to him as rheumatic types of the disease were found to have badly ruptured joints.

The technique of coccygectomy is thus described: The woman is placed in the Sims posture. The skin over the coccyx is cleansed by the operator after the patient has been anesthetized. A straight incision is made in the raphe from the tip of the coccyx to the end of the sacrum down to the bone. The tissues are separated by retractors, and with heavy scissors, sharp-pointed and curved on the flat, all the soft structures are cut loose from the bone. The forefinger of the left hand inserted under the bone acts as a guide and protects the rectum. If there is ankylosis of the sacrococcygeal joint, it is difficult to tell when the top of the coccyx is reached, and the mistake is easily made of leaving a part of the coccyx behind. The alæ of the first coccygeal bone are the best guides. The dissection must extend above these joints. Into the cavity beneath the isolated coccyx a sponge is stuffed to catch fragments of the bone or bone dust and to control hemorrhage. A chain saw is slipped under the bone and pushed up so that it takes off the tip of the sacrum. Two or three to-and-fro movements sever the bone. The only vessel, as a rule, requiring ligation is the median sacral artery, which is tied with catgut. A drain of five strands of silkworm-gut is laid in the rather deep wound, which is united with five or six interrupted silkworm-gut sutures. The wound is scarcely distinguishable from the raphe after a few weeks.

The Use of Normal Salt Solution.—

John G. Clark (*Progressive Medicine*, June, 1900) says the more extensive one's experience becomes in the use of normal salt solution, as a stimulant in abdominal operations, the more convincing is the evidence of the benefits to be obtained by its use. During the past four years he has made it a practice to leave at least one liter in the peritoneal cavity, after even the simplest operations. It increases the volume of the blood, lessens its specific gravity, stimulates the

cardiac ganglia, and accelerates the circulation. The skin, kidneys, and intestines are stimulated, and all the organs of the body functionate better under its influence. The number of red blood-corpuscles is distinctly increased. Its special use in abdominal cases is to prevent shock, to lessen the effects of hemorrhage, and decrease the virulence of infection. Next to the Trendelenburg posture, the author regards the introduction of the normal salt solution as one of the greatest benefits which have been conferred upon modern surgery in the last five years. Its most marked advantages are claimed to be a lessening of the thirst and an increase in the urinary excretion. Drainage from the peritoneal cavity the author regards as a problematic benefit, because of the rapidity with which absorption takes place by the lymphatics and peritoneum. In these cases he employs an infusion of large quantities of normal salt solution combined with the elevated dorsal posture. In moribund patients he has seen a marvelous stimulation from this treatment, which safely tided them over the critical period. Submammary infusions are quite as beneficial; they act almost as rapidly as intravenous transfusions, and are devoid of some of the complications which attend the latter. The writer's plan is to leave at least one or two quarts of salt solution in the abdominal cavity after every abdominal operation, and in addition to this a quart may be given beneath the mammary glands, in case the patient shows immediate shock. As a routine practice in all operations, either minor or major, one or two liters of salt solution is given per rectum, for the purpose of alleviating thirst.

The Operative Treatment of Tubercular Peritonitis in Children.—

Augustus Caille, in the *Archives of Pediatrics* for June, 1900, says the diagnosis of tubercular peritonitis is based upon the abdominal symptoms, such as distention, pain, and disturbed bowel action, together with the presence of fluid and the loss of weight. Of necessity the diagnosis must be made by exclusion, except in those cases where the tubercular bacillus is found. In a series of thirteen cases which he reports, a rise of temperature of an irregular type was found in all cases which were under close observation. There is nothing characteristic about the temperature curve. In cases of non-tubercular serous peritonitis, the fluid is free in the abdominal cavity, but in the tuberculous variety it is not free. It is rare that the tubercle bacilli are detected by the microscope in the fluid removed by puncture. In douhtful cases the opening of the abdomen is indicated and will do no harm. Paroxysmal pain in

the abdomen in children, in the absence of chronic appendicitis or abdominal fluid, does not indicate tubercular disease. It is usually caused by intestinal parasites, indigestion, or membranous enteritis, and may be overcome by dieting and attention to the bowels. The tuberculin test was employed in two of his cases—in one with positive results, in the other negative.

He makes four varieties of tubercular peritonitis: (1) Chronic tubercular ascites; (2) fibrocaseous tubercular peritonitis; (3) fibro-adhesive tubercular peritonitis; (4) tubercular peritoneal tumors. The cases reported showed the uselessness of medicinal treatment, and most of them had been treated for a considerable time before coming under observation. Spontaneous cures have been observed in cases presenting all the clinical evidences of the disease. A perfect cure even from operation is hardly to be looked for, as some abdominal symptoms will remain. If the case is complicated by tuberculosis in other organs, the prognosis is very unfavorable.

Latent Inflammation of the Middle Ear in Young Children.—

C. H. Burnett, in the *Pennsylvania Medical Journal* for May, 1900, calls attention to the fact that latent inflammation of the middle ear is often unaccompanied by symptoms calling attention to the disease. He speaks of the observations of Professor Ponfick, who found ear disease in 35 per cent of infants dying with acute gastroenteritis. In eleven cases of uncomplicated pneumonia, otitis media was absent in only one child. Out of one hundred cases, in less than nine was there a spontaneous rupture of the membrana tympani or any other external symptom of ear disease. In Ponfick's opinion, these children had in most instances died of disease originating in what may be termed symptomless chronic aural suppuration. Even more striking were the figures obtained by Simmonds and Barth. The starting-point of these middle-ear suppurations seems to be the nasopharynx, from which an infection of the middle ear takes place through the short patulous Eustachian tube of infants. Many of the fatal illnesses of children have their origin in an unsuspected otitis media, which is only revealed by an inspection of the membrana tympani. This should be a routine practice in the examination of sick children.

Placental Transmission.—

W. A. N. Dorland, in the *American Gynecological and Obstetrical Journal* for June, 1900, has a very suggestive article on this subject. The placenta acts as the lungs and digestive tract of the embryo,

but this expresses its function only in part. It has a distinct selective faculty, or, as it has been termed, absorptive power. It is an unexplained fact why certain morbific agents in the maternal circulation readily gain access to the placental circulation, and others with difficulty or not at all. He gives an extensive review of the literature of placental transmission of drugs and specific diseases, from which he concludes that many drugs may be administered to the mother without noticeable effect upon the fetus. There are certain substances that show a tendency to traverse the placenta and enter the fetal circulation, exerting their specific action. Maternal medication, therefore, is indicated in certain conditions of the fetus, or to counteract the effect of germs and their toxins already introduced into the fetal economy. The drugs that have been found to affect the fetus *in utero* are opium, mercury, copper, lead, arsenic, and the iodides. In acute diseases such as the exanthemata, or in chronic infections such as tuberculosis and syphilis, these drugs react deleteriously upon the product of conception, and either destroy it through their overwhelming toxic effects, or render it feeble. A disease may run an atypical course *in utero*, with or without apparent signs at birth. As a rule the infectious diseases do not manifest their characteristic visceral lesions in the fetus, probably because of the passivity of these organs during antenatal existence. The germs, however, may be detected in large numbers.

Myomectomy During the Sixth Month of Pregnancy.—

E. R. Lewis, in the *Journal of the American Medical Association* of June 23, 1900, describes a case of a patient 27 years old, a primipara, who, as a result of an advancing pregnancy attended with a fibroid, was rapidly losing strength. The tumor, which was about the size of an orange, was situated superiorly and anteriorly to the tube on the right side. A median incision was made, and the uterus pulled out through the opening. It was then found that what was supposed to be a distended tube was really a myoma in the uterine wall. An incision from five to six inches in length was made in the wall of the uterus exposing the tumor, which was then shelled out from its capsule. Very deep sutures were used to control the bleeding. The abdominal wall was then closed. The patient made a good recovery, and in twenty-eight days after the operation returned to her home. She was delivered of a healthy child without instrumentation three and one-half months after the operation. The case is one of interest from its extreme rarity, as there seem to be no recorded cases of removal of a myoma during pregnancy.

A Method of Recording Obstetric Cases.—

J. B. Cooke, in the *Medical News* of June 23, 1900, says few physicians in general practice make any effort to systematically record histories of cases. He has devised for this purpose history cards, which can be carried in the pocket as long as the patient is under observation, and afterward filed for reference. Three cards are used for each patient—one for the pregnancy, one for the labor, and one for the puerperium. The pregnancy has a space on its face for the patient's name, address, age, together with the personal and family history, an account of physical examination, and a brief history of previous pregnancies. There is also an account of the present pregnancy, together with the results of a thorough physical examination. The labor card bears on its face a minute record of a normal labor, together with notes on the membrane, cord, perineum, cervix, and the maternal condition for one hour postpartum. The puerperium card covers a period of two weeks, and has space for recording the temperature and pulse. At the termination of the case the three cards belonging to it are placed in the filing cabinet for future reference. A leather pocket case is supplied with the cards.

A Study of Slight Elevation of the Temperature During the Puerperium.—

In *Obstetrics* for May, 1900, is a translated article by K. Franz. His conclusions are as follows: Slight elevations of temperature during the puerperium are usually caused by saprophytes which gain access to the uterine cavity. The saprophytes do not cause fever; it develops only when the outflow of bacteria-containing secretion is prevented. Saprophytes which are found in the uterus in cases of slight elevation of the temperature are probably identical with the saprophytes of the vagina. Internal examination is usually a factor in causing slight elevations of temperature only in so far as it causes vaginal wounds, which serve to further the development of the bacteria which are always present. Slight elevations of temperature are more frequent in primiparæ than in multiparæ.

Stump Pregnancy.—

Under the above singular title John C. Morfit, in the *Medical News* of June 2, 1900, describes a case of extra-uterine pregnancy which occurred in the stump of the broad ligament after the ovary and tube had been removed. Two years after the original operation the patient was evidently suffering from an extra-uterine fetation. The sac ruptured before the operation, which was hurriedly done,

and it was found to be closely attached to the stump of the broad ligament. From this the writer argues that the ovum had traversed the remaining Fallopian tube, crossed the uterine cavity, and made its way out through the remaining portion of the Fallopian tube on the opposite side to become implanted in the stump of the broad ligament. This theory is certainly rather far-fetched, particularly as there is no absolute certainty that the entire ovary was removed upon the side which was operated upon. It is doubtful if this can ever be certainly affirmed. The ovary may be removed in its entirety, and yet certain ovarian tissue may be left in the broad ligament. The case is an interesting one, even if we reject the author's views.

FORENSIC MEDICINE.

Hermaphrodism.—

In *Progressive Medicine* for June, 1900, is a very interesting account of the case reported by Blacker to the Obstetrical Society of London, and which was later submitted to Nagel, of Berlin, whose studies on the embryological development of the sexual organs are so well known. The chief interest lies in the fact that Blacker claimed that his case represented a true bisexual organism, which prior to that time had never been authenticated.

Blacker's case was that of an eight-and-a-half-months' dead-born fetus, which showed no abnormalities of the body outside of the sexual organs. The external genital organs presented the appearances of both the male and the female types. The internal organs consisted of a shortened vagina and a defectively developed uterus unicornus, with a relatively large cervix. The right Fallopian tube and the broad and round ligaments were of normal appearance, and the sexual gland presented the appearance of an ovary. On the left side there was a rudimentary tube and epididymis and vas deferens; the latter was patulous and could be traced to the vagina, but its termination could not with certainty be ascertained. On microscopical examination the sexual gland on the right side, which was thought to be an ovary, was found to consist of connective tissue stroma, forming compartments which were filled with cell masses; under the surface the stroma was thickened and constituted a tunica albuginea which completely enveloped the gland. In the center of the gland the stroma predominated, in the periphery the epithelial elements. The latter formed, toward the middle of the

gland, small, slightly twisted cell columns, which consisted of two varieties—small, round, or polygonal, and large, well-staining cells, rich in protoplasm and possessing large nuclei. The smaller cells predominated, and in some places showed a tendency to the formation of spaces similar to the primary Graafian follicles.

The left sexual gland, while somewhat atrophied, showed unmistakable histological elements of the testicle. Blacker assumed that the right sexual gland was an ovary and the left a testicle, and is of the opinion that his case is the first which is free from doubt as to being a case of true hermaphrodism. His specimens have been submitted to Nagel, who after a careful examination states that he is not able to sustain Blacker's assumption. After a very thorough review of Blacker's microscopical sections, Nagel comes to the conclusion that this case is not one of double sex, but that both sexual glands are testicles. The fact that on the right side an unmistakable Fallopian tube is present is not a convincing evidence of the female sex, for frequently in male hermaphrodites the Fallopian tubes are present.

After classifying Blacker's case in the male category Nagel makes the statement that up to the present time there has been no case of true hermaphrodism (ovary and testicle in the same individual) reported.

A Fatal Case of Sulphonal Poisoning.—

A. E. Taylor and J. Sailer (Contributions from the William Pepper Laboratory of Clinical Medicine, 1900) describes the case of a nervous and hysterical woman with mitral stenosis, who had taken fifteen grains of sulphonal each evening for a number of months. The drug was ordered discontinued. Three weeks later she was found in a weak and slightly dazed condition, which her attendant stated had come on the day previous. She had no fever, could eat nothing, could scarcely talk, had complete insomnia, and presented a peculiar sighing dyspnea. A number of sulphonal powders were found in her apartment, and a specimen of urine taken at the time was found to be of a deep pink color. She was removed to the hospital, where she complained of stiffness of the legs, which was followed by paraplegia and loss of sphincter control the following morning. There was no pain in the legs; sensation was normal, the knee-jerks were absent, and the skin presented no abnormal appearance. The paralysis soon involved the arms, the power of swallowing disappeared, and she died of heart failure on the third day after admission. The temperature ranged from 97° to 98.5°,

and the pulse from 90 to 100. The respirations were from 28 to 32, and were of a peculiar sighing type. There was some loss of urine by incontinence, but the total amount collected during the sixty hours was 960 cubic centimeters. It was of a deep-red color, contained a trace of albumin and a number of tube casts. The specific gravity was 1010. The total amount of nitrogen in the urea was nearly twice that taken by the patient. Saturation with barium mixture precipitated large quantities of a pigment which, when extracted with acid alcohol or chloroform, presented a deep-red color. In dilute mineral acid in alcohol, the acid spectrum of hematoporphyrin was readily produced. The same substance was found in the blood. The liver showed wide-spread degeneration of the hepatic cells with small areas of focal necrosis scattered through the tissues. The central veins were dilated, but hemorrhages could nowhere be seen. But one kidney functionated, and this presented marked perivascular fibers. The heart exhibited a marked degree of fibrosis. The alimentary tract was normal, with the exception of mild proliferative gastritis.

The writers have been able to find in the literature thirty-four fatal cases of sulphonal poisoning, with ten autopsies. The prominent symptoms have been: Various forms of paralysis, often of wide extent—rarely spasms; various cutaneous eruptions; gastrointestinal disturbances and extreme constipation; cardiac and respiratory weakness with a peculiar dyspnea, with frequent mental disturbances; the absence of marked anemia; hematoporphyrinuria. The last has not always been present in acute cases, and in these unchanged sulphonal has been found in the urine.

Ophthalmic Practice.—

David De Beck, in the *Cincinnati Lancet-Clinic* of May 5, 1900, under the general title "Ophthalmic Memoranda," gives some medicolegal cases. He says that fortunately ophthalmic practice is rarely attended with medicolegal complications, but this department of medicine is not devoid of forensic relations, as has been shown by suits for malpractice after sympathetic blindness, glaucoma, cataract extractions, detachment of the retina, etc.

Two interesting personal experiences of the reporter relate to suits for services. One was a cataract case, in which he had plainly and frankly discussed the operation and the probable results with the son and daughter. The mother, who was a nervous, despondent woman, was assured that the result was certain, he confidently promising her that she should see all right, this course being thought

wisest. The operation passed over uneventfully, and immediately after she recognized a woman friend who had remained to witness it, and counted fingers. That night, some rags thrown in the flue in an adjoining room made her think the house was on fire, and she ran out into the cold hallway, barefooted. This was followed by acute coryza and suppuration of the cornea, with blindness. She refused to pay the fee agreed upon, claiming that the result which had been promised was not secured. The judge ruled that the physician had given her a guarantee to make her see, and surprised the physician by ruling that he had carried out his promise by the glimpse she had had during the few minutes between the operation and the bandaging of her eyes, and stated that the physician had not agreed to keep up this sight any definite length of time. Under this ruling the verdict was in favor of the physician.

In another case the writer was not so fortunate. A patient had been burned badly, which led to the enucleation of the injured eye to prevent sympathetic ophthalmia. The people were poor, and he accepted a small fee in payment for services, with the proviso that in case they secured any considerable damages in the suit they were about to bring, the full fee should be paid. This was agreed to. In the meantime the boy had become of age, and they received $1500 on a compromise. They refused to carry out the agreement, and the writer attached the money not yet paid over. The lower court decided on the payment, but on appeal the case was reversed on the ground that the agreement made by the parents before the boy became of age did not apply to him after that period in the absence of a specific agreement on his part. This leads the writer to remark that it is good policy, when agreeing to get a sum of money, to find out who is to pay it. We think emphasis is lent to this last remark by the frequency with which physicians render service without any very clear idea as to who is to be responsible for the payment.

The Relation of Agent to the Employment of a Physician.—

In these pages we have frequently referred to the contractual relations of physicians and patients. A decision given by the Supreme Court of Missouri in 1888 is quoted in the May issue of the *Peoria Medical Journal.* The action is entitled Bartlett *vs.* Sparkman, and is found in 95 Missouri, p. 136. The cause of the action was raised by the defendant sending his brother to summon a certain physician, who could not be found. The brother then went to another physician and sent him to the defendant's house, fourteen miles distant. When the plaintiff arrived there he was met by the

defendant, who said: "Doctor, we don't need your services now, for the trouble is all over." The physician then drove away, and later presented his bill. The defendant refused to pay, on the ground that he had given no authority to his brother to send the plaintiff, but had only asked him to send a particular physician. On the above facts, over which there was no dispute, the trial court instructed the jury that there was no evidence to support the plaintiff's claim against the defendant; that, as a matter of law, there was nothing to show, or tending to show, that the defendant had authorized the agent to employ the physician who made the visit.

The Supreme Court reversed and remanded the case, stating the conclusion of the court in giving the instruction was based on the well established general doctrine that the acts of a special agent not done in pursuance of the authority, or done in excess of it, are not binding upon his principal unless confirmed by him with full knowledge of the facts and circumstances. The rule, however, is not of general application; there may be instances in which a strict adherence to the terms would defeat the object of the agency. There may arise such new and unexpected emergencies as will justify the agent in assuming extraordinary powers, which, if done in good faith and with sound discretion, will bind the principal. The object of the agency in this case was to procure a physician, and, while the agent was directed to secure a certain physician, his inability to obtain the one specified created an emergency which required him to ride fourteen miles back for further instructions, or procure the services of another physician. The decision of the agent was clearly right, and he acted within the scope of his agency. It must be assumed that primarily what the defendant wanted was a physician to come to the house and attend his sick wife. True, the physician of his first choice could not be found, but it was apparent that the important thing was to get a physician, and such was the intent of the agency.

A Crooked Ankle Indicative of Malpractice.—

A case is reported in the *Journal of the American Medical Association* of May 5, 1900, which raises a singular point, of some interest to physicians. The abstract of this case was taken from the *Southwestern Reporter*, vol. liv, and it is said that the decision is "not to be officially reported." An action was brought against certain physicians for damages resulting from a failure to secure accurate union in a fracture of the leg near the ankle. At the close of the

plaintiff's testimony, the court instructed the jury to find for the defense, on the ground that the plaintiff had not made out a case. The court of appeals holds that this was an error, as there was sufficient evidence adduced to show that the foot was crooked, and in consequence of this deformity the ankle-joint did not move normally, and it was painful and difficult for the person to walk. The court is inclined to take the view that this is presumptive evidence of a faulty setting of the leg, for it says that the evidence went to show that there was a union of the bones in their faulty position, and presumably if they had been set correctly union would have taken place much the same. The court recognizes the well settled principle that physicians and surgeons should be held to possess only the usual ordinary professional skill of the members of their profession, and that without special contract there is no guarantee of a cure. It goes on to say that in Kentucky no person is permitted to practice medicine without a certificate from the State Board of Health, and where by the energy and vigilance of that body the profession of medicine has reached so high a standard that a jury would be warranted in concluding a physician guilty of negligence who, in resetting a broken leg at the ankle, would leave the foot crooked.

This is the first time we have noted in a judicial decision that the increasing requirements for registration of physicians was held *prima facie* evidence of a high degree of skill, which is to be determined, not by the trial judge, but by the arbitrary dictum of a superior court. It may be that the lower court erred in directing a verdict for the defense, but if so, the error was not in recognizing a higher standard of medical qualification, due to the efforts of the State Board of Health. It was an error growing out of the failure of the trial court to justly preserve the rights of the plaintiff under the well established rule that physicians are held to exercise ordinary care and intelligence in the practice of their calling.

Verdict Against a Hospital.—

We have referred in past issues of MEDICINE to the celebrated suit of Helen D. Ward against St. Vincent's Hospital, which had its origin in an operation performed by the late Dr. William T. Lusk in February, 1894. The last time we mentioned the case was in speaking of an opinion in favor of the defendant, which was given by the trial court on the ground that the hospital was a charitable institution, and hence not liable for the negligence of its employees, the ground of this opinion being that the payment of a bill for damages on account of the negligence of an employee was in effect a diversion

of funds that were donated for a specific charitable purpose. From this decision an appeal was taken by the plaintiff, the higher court reversing the decision of the lower court, and holding that the hospital, although in part a charitable institution, had also a department for pay patients. It seems that Miss Ward, at the time she entered the hospital, took a private room, for which she paid $25 a week, and in addition three dollars a day for the services of a skilled nurse. The negligence in this case consisted in the nurse letting a hot-water bag remain in contact with the patient's leg until she was severely burned. The case was remanded for trial, which was had in December, and the jury disagreed. The apparent effect of the decision is to make a distinction between pay and charity patients in a hospital. It is held that the degree of care which must be exercised in the case of a pay patient is greater than that of a charity case. The decision does not seem to be primarily a just one, as there is quite as much a diversion of trust funds in paying damages to pay patients as to the indigent. The decision either way is of no great consequence, for if it is held that the hospital is not liable to pay patients, then it is notice to all such that they cannot recover from a charitable institution. The latter is undoubtedly the better rule.

A Libel on a Physician.—

The Court of Pleas of New York (*Journal of the American Medical Association*, June 9, 1900) holds that a newspaper article is libelous upon its face where it charges a physician with a want of professional ability and integrity. In the case of Krug *vs.* Pitas such an article is cited, referring to a physician as a blockhead and a fool, and appeals to a certain class of the population not to entrust themselves or their families to his care. These words are held to have a direct relation to his business and to assail him in his capacity as a physician. They hold him out as unworthy of employment and appeal to his old patients to no longer trust him. The reflection is not only upon his character as a man, but upon his ability as a physician, and imputes to him a want of those qualifications which attract patronage and are essential to the calling. It tends to undermine him in the confidence of the community, which is the foundation of professional success. Calling a physician, as such, a blockhead or fool necessarily reflects upon his ability to practice medicine, and speaking of him as so influenced by hatred toward his patients that he would not heal them, necessarily reflects upon his integrity as a physician. The court holds that such an article is

actionable without proof of any damages, for the law imputes malice in its publication and presumes damages have been sustained from the bare act of publication. While the physician so libeled is entitled to recover, the damages must be limited to such an amount as will fairly compensate him for the actual injury sustained. To enable him to recover punitive damages, it is necessary for him to furnish evidence of expressed malice as distinct from malice implied.

The Responsibility of the Keeper of a Private Lunatic Asylum.—

In a former issue of this journal we referred to a judgment which had been obtained against the director of a private house for the insane in France. In that place the amount recovered was ten thousand francs, and was had for the suicide of a female patient. A second case is to be found in the *Journal de Médecine* of May 20, 1900, in which an action was brought against the keeper of a private asylum for the suicide of a patient. In the report of this case the full text of the decision of the court is given, which carefully considers all the evidence submitted in the case; the issues are found in favor of the keeper of the asylum, who was declared to have exercised all due care and diligence in caring for the patient. The patient had been received while suffering from a third attack, which was said to resemble in every respect those which had preceded it, which had been followed by such marked improvement that the patient had been able to leave the institution. The improvement after the admission for the third attack was very marked, and as it advanced more and more liberty was accorded the patient, and it was in consequence of this that the accident occurred. The patient, while walking, observed the approach of a heavily loaded cart. As it was passing the patient placed his head beneath one of the wheels of the cart, which produced injuries from which he died. The decision, curiously, does not lay down any principles which would be a guide in formulating the responsibility, but simply carefully analyzes the evidence and comes to the conclusion that the asylum authorities were not responsible.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of repriuts; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

BONE FOOD.[1]

BY B. T. WHITMORE, M.D., LL.D.

Before entering upon the discussion of the point which it is my purpose to present in this paper, I must express my regret that in the interest of simplicity and accuracy of definition we have not in English an exact equivalent of the word which is found in the German, "nahrungsmittel." In default of a precise definition it becomes necessary to explain at the outset the sense in which bone is to be regarded as a food.

The purpose of all food is to provide a fresh supply of the elements which are constantly exhausted by the mechanical operations of life, and which are excreted through the organs of elimination as oxides and other waste material or by-products. It will be immediately apparent that if "x" represents the normal weight within a given product of any necessary constituent, and "y" the amount consumed in the mechanical and chemical changes that constitute life for any given unit of time, such as a single day, and "z" the amount of that constituent which is replaced within the same period of time, then just in proportion as "z" approximates "y" the normal is maintained. The normal is health, and therefore the preservation of the normal must be the object sought. If "z" be greater than "y," we tend to establish a new normal which shall be greater than "x," and we risk the approach to a state of intolerance entailing a chain of uncomfortable symptoms following on the overabundance of the constituent in question. On the other hand, if "z" be less than "y" we risk the approach to another and diverse set of symptoms following on the

[1] Read before the Section on Physiology and Hygiene, American Medical Association, Atlantic City, June 8, 1900.

deficiency of the amount of the same constituent. In the one case the manifestation is plethora and obesity; the limit at the lower extreme is starvation. Starvation does not mean the deprivation of all food. A man may starve even to death in the midst of a plenteous supply of food provided that it be deficient in any one of the constituents which are being oxidized and thrown off. A conspicuous proof of that proposition is found in the fate which overtook the distinguished Australian explorers, Burke and Wills. They had struggled through many hardships to a fertile oasis in the desert. On either bank of Cooper's Creek they found acres of waving grain, an indigenous cereal known as "nardoo." Beyond the oasis they dared not venture upon the trackless desert. There they camped to await the coming of the relief party. There was enough food to support a regiment, and they were but three. Yet the two leaders of the expedition died of starvation, the third member of the party being found at the last ebb when the rescue party reached them seven months later. In the midst of plenty they had starved; they died of starvation even when gorged with food. Baron von Mueller, the goverument botanist of the colony of Victoria, conducted an analysis of the "nardoo," and found it remarkably deficient in phosphatic constituents. In general terms, as already used, "z" was so much below "y" that these heroes of scientific research starved to death in acres of food.

We have a safe index to the character of food which is needed, at least in the more organized structures of animate life. That index is found in the dentition. From it we are able to segregate the graminivores, the frugivores, the carnivores, with their subsection of insectivores. Without details we may pass these by and look at the index contained in the dentition of mau, whom we are to study. Here we find an equipment for a mixed diet — grinding teeth, cutting teeth, tearing teeth. Oversensitive susceptibility, often reaching the most absurd proportions, has affected to disregard the meaning of incisors and bicuspids and argue that the proper diet of mankind should be vegetal. The human mouth is not paved with molars, as it should be to support this theory. The mixed diet is indicated by human dentition, and is supported by the study of all the apparatus of alimentation, and finds irrefragable proof in the comparative analysis of the body fluids and tissues and of the articles of food.

At the earliest ages of human life, of which only the most obscure traces have come down to us, long before human history begins, we find the man and the bone; or rather we find the bone in the cave,

and we argue thence to the man. In the cave litter of early man and his long extinct contemporaries, the cave bear and the cave hyena, we find the bone on which the beast has fed and the bone on which the man has fed, but with this important difference: the beast's bone is smoothly gnawed; the man's bone may or may not be calcined through cooking, but it is split along its major axis. The beast has derived sustenance from the material of the bone itself; the man has used the bone to extract the food within it—its marrow.

Taking the dog as a familiar type of animal which characteristically maintains health when left to natural conditions without the aid of medication, there must be found in his customary diet those elements which preserve health through the consistent application of food. In other words, alimentation is designed by nature to produce, preserve, and maintain the equivalence between the "z" and the "y" of our hypothetical statement. This we know: a dog in the normal state keeps in health through food; it is only rarely that he seeks medication, and even then it amounts to no more than a variety in food derived from nibbling at certain succulent grasses which seem to be endowed with vegetable acids and consequent alterative effect. The dog is an excessive consumer of bones; indeed, the average layman is inclined to the belief that this is the major portion of his diet. We cannot be altogether above popular knowledge, for it has a certain large element of the wisdom of observation. Therefore it is worth while studying why bones are a good food for dogs. Furthermore, it is worth while studying if the elements which make the bone dietetically valuable to the dog might not find a satisfactory application to mankind.

Dietetics and hygiene work along the line that the prevention of disease is as worthy of study as the restoration to the normal when diseased conditions have become established—that is to say, the whole science is expressly reparative and preventive rather than restorative and corrective. Restorative medication has long since recognized the importance of the phosphates. Along that line we find in our materia medica a large group of hypophosphites, orthophosphates, pyrophosphates, and many syrups, wines, and elixirs of the phosphates. The common element in all these medicaments is the phosphate, distinctly for the purpose of supplying the phosphatic waste in the corporal economy. As investigators in the science of reparative and preventive medicine it is proper to examine the common articles of food with respect to their ability to supply the phosphates which are daily consumed. The following tabular state-

ment shows for common articles of diet the proportion of mineral salts and phosphoric acid in each:

DIETETIC VALUES OF FOODS.

	A.—Percentage of mineral salts.	*B.—Percentage of phosphoric acid.*
Bran	5	2
Oatmeal	5	0.8
Fatted meat	3.7	1.2
Fat pork	2.3	0.7
Wheat	1.7	0.7
Lean meat	1.6	0.6
Average meat	1.6	0.6
Maize	1.4	0.8
Potatoes	1.2	0.2
Poultry	1.2	0.6
Whitefish	1	0.5
Flour	0.7	0.2
Turnips	0.5	0.1
Rice	0.5	0.1

A cursory examination of this table shows that the first place in each is occupied by bran. It is distinctly the richest article in both the mineral salts and phosphoric acid; but bran cannot be considered an article of food, and may be neglected. The next place is held by oatmeal and the meat of fatted cattle; the oatmeal being a little richer in salts, and fatted meat a little richer in phosphoric acid. If the two articles are taken in conjunction they supply to the body about four per cent of mineral salts, representing scarcely more than one per cent of phosphoric acid. That this may be an insufficient supply is made apparent by the frequent need of the hypophosphites above mentioned. We should extend our search for some article that may be readily digested and contains a richer supply of the phosphates.

In this search we are surely led to the bone, the food which the dog constantly uses, the food which enables us to recognize the cave man as a contemporary with the extinct cave bear, tiger, and hyena. Mankind has not generally learned the lesson which is the instinctive possession of the lower animals whose systems demand meat food, namely, the utilization of the bone. To bring that lesson to your attention is the purpose of this paper.

In a rough estimate four-fifths of the human body by weight consists of water. Of the solid remainder the most characteristically mineralized portion is the bony skeleton. With the analysis of bone structure we are all familiar; it shows an exceeding richness in phosphatic materials. If bone can be digested it should afford the most compact medium through which to supply the phosphates needed to repair the phosphatic elements which are wasted in the economy of life.

It has so long been established as to be axiomatic that whatever tissues are formed or deposited within the body may be absorbed. That this applies to the hard as well as to the soft tissues has been proved by a long chain of observation. Furthermore, we know that the digestibility of any material susceptible of digestion increases in proportion to the fineness of its comminution.

In bone we find the mineral phosphates deposited as an apparent solid. Yet the solidity is only apparent; bone substance is everywhere perforated by the canals of Haver with lacunæ and cancelli, all of which render the bone substance readily permeable by the digestive fluids. On still further analysis we find that the mineral elements of bone are deposited in the most minute form in collagen, which is itself readily digestible and yields nourishment. Bearing these points in mind we make use of the reparative value of the bone by subjecting it to a reduction into a fine powder or flour. It is well understood that no amount of such a purely mechanical process as grinding can reduce a chemically formed substance so fine as to break up its composition. Accordingly, no matter how fine our bone flour may be ground, each particle remains a minute deposit of mineral phosphate in collagen and permeated by the cancelli of its structure, which provide a capillary system for the induction of the digestive solvents to the inner portion of each such particle. In this condition the process of digestion carries into the circulatory system the needed supply of the phosphates in a form suitable for assimilation, and this enriching material is taken up by the tissues wherever there may be need existing for reparation.

Bone flour is prepared from the larger bones of sound beef cattle. The bones are thoroughly cleared of all muscular and tendinous tissue, dried, and ground. The resulting product is a fine powder devoid of taste and odor, and which will keep indefinitely. It is given in admixture with other foods in such proportion as will serve to bring them up to the standard phosphatic supply. To ordinary flour or meal of the common cereals it is recommended in the proportion of from three to five per cent. In general it may be mixed with any food article which is sufficiently glutinous to hold it in general admixture, or it may be taken in suspension in milk or water. It is not intended to take the place of the various hypophosphites as a remedy, but as a dietetic agent it will frequently make the administration of the hypophosphites unnecessary.

NORMAL SALT SOLUTION IN THE TREATMENT OF HEMORRHAGE IN TYPHOID FEVER.

BY C. H. ANDERSEN, M.D., CHICAGO,
Member of the Chicago Academy of Medicine.

Through the courtesy of Surgeon-General George M. Sternberg, U. S. A., I published a brief review in the *Philadelphia Medical Journal* of July 15, 1899, of 412 cases of typhoid fever treated at the United States General Hospital, Fortress Monroe, Virginia, from August to November, 1898. Of eighty-seven under my personal care, eighteen had been sent from Newport News, Va., originally from Chickamauga Park; twelve from Tampa on a hospital train; thirty from Santiago; and twenty-seven from Porto Rico on transports. The cases from Chickamauga Park were most severe, with temperatures running from 102.4° in the morning to 105.2° in the evening, the typical coated tongue, enlarged spleen, tympanites, rose-colored spots on abdomen, characteristic stools, very severe nervous symptoms, twitching of facial muscles, picking at the bedclothes. In thirteen cases there was delirium. Four of these cases had hemorrhage from the bowels; two had one hemorrhage, one had two, and one five. The twelve cases received from Tampa were typical and had nearly all the symptoms of those from Chickamauga, with the exception of the nervous symptoms, only one patient having had slight delirium. One had hemorrhage from the bowels. The thirty cases from Santiago were all characteristic cases of typhoid fever of a mild form. The temperature in these ran lower than in those coming from Tampa and Chickamauga; spleen enlarged, typical typhoid stools, and distention of the abdomen. Only two cases showed any nervous phenomena. Two had hemorrhages from the bowels. The twenty-nine cases treated that came from Porto Rico were similar in character to the last named. There was distention of the abdomen, the typical tongue and stools, complexion of the face yellow, and very profuse night sweats. The spleen was not so much enlarged. None of these had nervous disturbances, none hemorrhage from the bowels, and only one had relapse.

All the patients were treated in tent-hospitals, composed of four small field tents which held twenty patients comfortably. The floors were of wood, raised eighteen inches from the ground. The flaps could be rolled up on all sides. These tents were ideal wards for treating fever patients. No cold baths were given, no matter how high the temperature rose. There was fear of pneumonia, owing

to the rapid changes of temperature constantly occurring in the tents. It was impossible to give cold baths to all these patients, as only one trained female nurse was in charge of each ward in the daytime, and one to every two wards at night. There were also male attendants, but they were unskilled and could not be relied upon to give baths. The floors of the tents were scrubbed twice a day with solutions of bichloride of mercury. All the stools, discharges, and bed utensils were disinfected thoroughly in all instances. Bedclothing was disinfected prior to being sent to the general wash by steeping it in a strong solution of mercuric chloride.

The treatment consisted of a lukewarm bath every forenoon; calomel in two-grain doses two or three times a week, the frequency of administration and the quantity administered depending upon the condition of the patient's bowels; $\frac{1}{60}$ grain of strychnine nitrate was given to each case morning, noon, and night; milk in two-ounce doses was administered every two hours, and water in the same amount every two hours. Whenever the pulse was weak, brandy was given in half-ounce doses every four hours and increased according to the condition of the patient's heart and pulse, some cases receiving as much as fourteen to eighteen ounces in twenty-four hours. The milk was increased day by day until five or six ounces every two hours could be given, with the same amount of water. The stools were watched very carefully, and as soon as it was observed that the milk was not entirely digested, the quantity of milk was decreased and the water increased until complete digestion was reached. Peptonized milk was only give to those cases having irritable stomachs. The strychnine was increased when the heart was weak. No patient was allowed anything but milk and water diet until two weeks after the temperature had become normal, and no patient was allowed to sit up in a chair until three weeks after the normal temperature had been noted. In the third week of convalescence light diet was allowed: soft-boiled eggs, eggs beaten up with milk, ice cream, and very soft milk-toast. Mellin's food was used to advantage, especially in those cases where pure milk diet had become very monotonous and where the stomach refused to accept it. It was especially useful mixed with hot water in those cases with great irritation of the intestines, and diarrhea. After two weeks more of this diet the patient was gradually given more substantial food, until eventually the usual diet was reached. Of the eighty-seven cases treated, there were only five relapses. Visitors were watched very carefully, so that no patient was fed

anything that was brought from the outside, as one of the relapses occurred after eating a doughnut which was brought by an over-charitable woman whom the patient had told the day before that he was being starved. The other relapses were thought to be due to similar causes. Of the seven cases with hemorrhage from the bowels, five were transfused with normal salt solution. The following case is an extraordinary example of the last class, and is of interest as demonstrating the efficiency of the normal saline transfusion:

Corporal, Company L, Fifth Illinois Volunteer Infantry, was admitted August 27 from the camp of the volunteer troops at Newport News, with diagnosis of "enteritis." Prior to arriving at Newport News this man came from the camp at Chickamauga, suffering from enteritis, so that when he was finally removed to the General Hospital at Fort Monroe he was in a low condition. On the day of his admission to the hospital his evening temperature was 105.2°, his morning temperature 104.2°; typical typhoid stools, spleen greatly enlarged, tongue characteristic, rose spots on abdomen, tympanites, and very severe nervous symptoms. He would lie on the bed with eyes wide open, muttering to himself, and at night would become so delirious that he would have to be tied to the bed, as it was impossible to put on a special nurse, owing to the small number of nurses in attendance. His pulse was rapid and very weak. He was put on a milk diet, two ounces every two hours, two ounces albuminized water every two hours, half an ounce of brandy every four hours, and $\frac{1}{40}$ grain of strychnine every four hours. At the beginning of the second week he was getting five ounces of milk and five ounces of albuminized water every two hours, one ounce of brandy every three hours, and $\frac{1}{40}$ grain of strychnine every three hours. The fever ranged from 102° mornings to 105.4° in the evening. Delirium became so violent and his struggles so exhausting that a special nurse had to be substituted for the mechanical restraint. The feces and urine passed involuntarily; the abdomen was distended. Hot turpentine stupes were applied, and turpentine in five-minim doses was given internally with no effect. The milk was well digested, and was increased to six ounces every two hours. The skin was cold and clammy, and he was very low.

On the twenty-sixth day after admission the temperature reached 106.2° at 5 P.M.; at 2 A.M. the following day the temperature suddenly fell to 98.5°. I found the man collapsed. On administering one-tenth of a grain of strychnine, the patient had a copious bloody

stool. A quart of hot water with two teaspoonfuls of sodium chloride was quickly put into a fountain douche bag, an ordinary eye-dropper point attached to the end of the rubber tubing, an opening made in the median basilic vein, and the glass point introduced. The bag was elevated three feet above the bed and the whole quart injected in about twenty minutes. Hot-water bags were placed in the bed and extra blankets put over him, brandy was administered by mouth, and ether hypodermically. He rallied nicely, and at eight o'clock next morning seemed to be in a better condition than he was the day before. No nourishment except water and brandy was given during the day. That evening the temperature was 103.6°, skin warm and moist, and delirium less than for nearly three weeks. During the night he was given milk in two-ounce doses twice, and had to be awakened to give it, this being the first night he had slept normally for three weeks. One-thirtieth grain of strychnine was given hypodermically every four hours. For the next four days the temperature ran from 101.4° mornings to 104.2° evenings, and the delirium was decreasing.

On the thirty-first day, at three o'clock in the morning, the nurse reported to the physician who was officer of the day that this patient had another large hemorrhage. I found the patient again collapsed. Pulse could not be felt at the wrist, face was cold and clammy, nose cold, and cold perspiration all over the body. In the meantime the nurse had prepared two quarts of normal salt solution, which was injected in the same vein as before, this time the fountain syringe being elevated about four feet above the bed. About three pints was injected. The patient rallied very well; hot-water bags were placed around him, whiskey administered by mouth and ether hypodermically, and $\frac{1}{20}$ grain strychnine every two hours. At nine o'clock the next morning the patient was conscious and asked for something to eat. The temperature was 101.4°. He was given albuminized water and brandy every two hours. Toward evening a little hot milk was administered; the temperature was then 102.6°. Peptonized milk was given every two hours during the night. The patient was conscious each time he was awakened to administer nourishment, complained of hunger, and wished for more each time food was given. During the next four days the patient's temperature ran from 101.2° to 104.3°; he was then getting four ounces of milk every two hours, and the same amount of albuminized water, $\frac{1}{30}$ grain strychnine every three hours, $\frac{1}{100}$ grain digitalin every five hours, and eight ounces of brandy every twenty-four hours.

On the thirty-fifth day, at eight o'clock in the morning, I was

again sent for hurriedly, and was told by the nurse that he had another bad hemorrhage, and that she thought he was dead. The officer of the day had given him $\frac{1}{20}$ grain of strychnine and an ether injection. No pulse could be felt at the wrist. This time he looked like a corpse, but again the salt solution was resorted to and a quart was injected. The water was 114° when poured from the pitcher into the bag. The first symptom of life shown by the patient was when he put his hand over his heart and complained of severe pain. The fountain bag was lowered, and the transfusion proceeded more slowly. He did not rally so well after this one, and at eleven o'clock the same forenoon another quart was administered. This seemed to improve him very much, and he appeared to be getting better during the day, although he was extremely weak. The case now began to attract considerable attention, and it was watched with great interest by all the physicians at the hospital. On the thirty-ninth day a small hemorrhage again occurred, but the patient seemed to rally well after it. Normal salt solution was put into the bowel every four hours.

On the forty-seventh day another small hemorrhage took place, and patient was again transfused with a quart of normal salt solution by the same vein, the opening in the arm not having been sewed up, the vein being tied with a loop knot so that it could be easily opened and dressed and bandaged. From this time on the patient steadily improved. His appetite became good, and he was receiving six ounces of milk and six ounces of albuminized water every two hours. No more whiskey was given as the patient's stomach would not tolerate it.

On the fiftieth day the patient's temperature was 100° in the morning and 103° in the evening. Abscesses now appeared on cheek, side, on the leg, and other parts of the body. Two enormous diffuse abscesses, one on each buttock, formed, and he was compelled to lie on his abdomen. An ugly abscess also appeared on the index-finger of the right hand with necrosis of the bone. It was amputated at the distal joint and the wound healed very quickly.

On the fifty-fifth day his temperature was normal for the first time both morning and evening, and from this on he began to improve very rapidly. During the convalescent stage the stomach refused milk, and Mellin's food was used, mixed with milk, with gratifying results. On the seventieth day patient was given milk-toast and soft-boiled eggs, and from then on recovery was rapid. He left my ward on November 19, a thoroughly well man. I have heard from him since, and he has never been in better health.

Four other cases were transfused, all with great benefit, although none of them were in as bad condition as the patient described.

In going through the literature of normal salt solution transfusion, I have found no case reported in which this has been done in hemorrhage from the bowels in typhoid fever. The mortality in typhoid fever accompanied by hemorrhage is very great, and transfusion should be done in every case, and I feel it will be followed by great success, especially in hospitals where all conveniences are at hand. It must be remembered that in the case reported transfusion was done in a tent without antiseptic and aseptic material, and with no conveniences with which to do careful work. I attribute the abscesses to the fact that the saline solution had not been filtered. As I can find no reports published of this operation in this condition, I claim priority for it.

100 STATE STREET.

PREGNANCY COMPLICATED BY SUPPURATION OF FIBROIDS.

BY CHARLES GREENE CUMSTON, M.D., BOSTON, MASS.

The question of complications due to fibroids during pregnancy and the postpartum period is important both to the general practitioner and the surgeon, and is a vast subject.

We all know the frequency of metritis in cases of fibroid, and the serious complications which may ensue from the lesions of the endometrium; we also know the renal complications due to these growths, such as pyelonephritis. Various forms of cystitis are also met with. Hemorrhage complicating fibroid growths of the uterus is probably the most frequent and one of the most serious complications which may occur, and is generally met with postpartum, although cases are recorded where loss of blood occurred during gestation, in which case the neoplasm is usually in the cervix.

Of these complications I will say nothing, and shall confine my remarks to the inflammatory and infectious processes occurring in fibroids and which frequently complicate the postpartum period. Naturally their frequency has considerably diminished since the introduction of antiseptics. The septic complications are of two origins: they are either produced indirectly by the fibroid, following obstetrical manipulations and operations of all descriptions necessitated by the presence of the growth, and where surgical antisepsis and asepsis have been improperly carried out; or the complications may be produced directly from a necrosis of the growth which has been produced by laceratiou or compression that they have undergone during labor, or following a softening of the fibrous mass during pregnancy.

It is, however, necessary, in order that infection shall take place, that an entrance has been given to the pyogenic germs existing without, because it is well known that a subperitoneal fibroid, for example, which has lost all its connection with the uterus, and which is free in the abdominal cavity, will never give rise to any septic process. But even after a perfectly normal labor, numerous lesions can be produced in the lymphatic and venous channels which allow easy access of pathogenic bacteria if strict surgical cleanliness is not observed.

My experience with pregnancy complicated by fibroids giving rise to septic conditions is limited to two cases, and I will briefly report these and quote a few others that have been reported in the literature:

Case 1.—We saw in consultation a young woman 25 years old, who had been delivered of her first child four weeks previously. The labor, otherwise than being rather tedious and long, had been perfectly normal. Twenty-five days after the confinement the patient had a chill, and the temperature went up to 39° C. At our visit we found the abdomen distended, the pulse 120, presenting the peritoneal type. The urine contained a considerable amount of albumin, and indican was present. Upon examination the uterus was found to reach nearly to the umbilicus; the cervix was soft, and the uterine cavity, which was greatly dilated, was found filled with a dirty, fetid pus. In the right iliac fossa a large purulent pocket was found communicating with the cavity of the uterus. This was opened by posterior colpotomy and explored, which resulted in removal of the débris of a fibroid tumor about the size of an orange, which had been compressed during labor and had undergone gangrene. The bits of neoplastic tissue were removed, the cavity was irrigated and thoroughly drained, and the patient made an uneventful recovery.

Case 2.—A woman 32 years of age, who had been married five years, during which time she had had four miscarriages, all occurring about the second month. When seen for the first time a pregnancy of about four months, complicated with a fibroid tumor, was diagnosticated. About two weeks after seeing the patient she developed all the symptoms of a pelvic peritonitis, and in a few days gave birth to a fetus about five months old. About ten days after the miscarriage the patient had a chill, the temperature reaching 40° C., and the pulse was rapid and intermittent. This condition did not change, and as the symptoms of septicemia were rapidly increasing, we decided to open the abdomen. Laparotomy was performed, and we found a large subperitoneal fibroid, which had contracted firm adhesions with the parietal peritoneum, the omentum, and intestine. Palpation of this large tumor showed that in certain spots it was fluctuating, and an incision was made over the most prominent point of fluctuation, which gave issue to about a liter of yellowish, creamy pus. On account of the extensive adhesions binding the growth, which would necessitate a very long and tedious operation for its removal, and could not be withstood by the patient on account of her very poor general condition, we drained the pocket and closed the abdomen. The patient, however, died in twelve hours after the operation. Unfortunately no autopsy could be obtained.

Here are a few other cases which I have found reported. The

first is that recorded by Hegar, of a patient three months pregnant, who presented a large uterine fibroid which had become softened and inflamed. Peritonitis developed, and laparotomy was done, but the patient died three days afterward.

Treub reports the case of a woman 27 years old, who for several years had presented an abdominal tumor which extended up to the umbilicus, but had never given rise to any pain. Menstruation had always been regular, and when seen she had been married for a year and was about three months pregnant. She then developed a peritonitis, and a miscarriage occurred five days later. There was a severe hemorrhage following this, which was controlled by ergot. A fetid vaginal discharge set in, accompanied by fever and a poor general condition. The tumor was found to extend above the umbilicus. Curettage under narcosis was decided upon, and at the same time to make a complete examination. The tumor was found to be solid, and no fluctuation could be made out. The uterus could not be mapped out from the tumor, so that in all probability it was a fibroid very intimately connected with the body of the organ. Curettage brought away a yellowish débris, and a diagnosis of gangrenous fibroid was made. The next day the abdomen was opened, but the adhesions attaching the growth to the abdominal wall and intestine were so thick and firm that it was considered dangerous to break them down. A median incision was made, extending along the entire anterior wall of the uterus, in order to enucleate the neoplasm, which was found free in the uterine cavity. The tumor was removed, the uterus and abdomen were sutured, and the cavity of the uterus tightly packed with gauze. The patient recovered in spite of two utero-intestinal fistulæ. This was a case of a fibroid tumor which had attained an advanced stage of necrobiosis.

Frommel's case was a woman in the fifth month of gestation. The fibroid, which was about the size of a fetal head, was inflamed and softened; peritonitis developed, and myomectomy was done. She recovered, and was delivered at term.

Croffard reports the case of a woman in the sixth month of a pregnancy complicated with a uterine fibroid. The neoplasm surrounded the cervix like a cuff. Symptoms of infection arose, and as the fetal foot protruded it was seized and the child delivered. Infection, however, continued, and seventeen days later the abdomen was opened. The neoplasm, which was gangrenous, was so adherent that removal was impossible. As much as possible was removed by the thermocautery, and the tubes were also removed. The patient recovered.

Bonipiani has recorded a case of a 35-year-old primipara who had a fibrous tumor in the posterior wall of the uterus. Artificial abortion was performed during the sixth month, after which the patient developed a pelvioperitonitis, but recovered.

There are a few rare instances of so-called spontaneous purulent disintegration taking place in fibroids during pregnancy which are in all probability due to septic infection. I have only been able to find two cases—one reported by Krukenberg, the other by Cappil. In the first case the patient was suddenly taken with chills and presented symptoms of severe peritonitis. Miscarriage took place, and six hours after this the patient died. Necropsy revealed pus in the broad ligament, in the peritoneal cavity, and in the uterine cavity. In the second case there was an ovarian cyst, and on the right upper angle of the uterus was a fibroid with torsion of the pedicle, which had resulted in gangrene of the neoplasm. From this condition there had resulted a local inflammatory change in the neighboring intestinal coils, with the result that the intestinal bacteria had invaded the growth and suppuration had resulted.

In some cases we get an edematous softening of the fibroid which is followed by a necrobiotic disintegration. The edematous condition is usually due to hemorrhage into the neoplastic tissues, resulting in cystic formation. There results an engorgement of lymph, and if any chance for infection is offered after delivery the neoplasm becomes rapidly purulent.

Other complications due to fibroids may occur during the postpartum period, such as phlebitis, inversion, or prolapse of the uterus, all of which appear to be infrequent; and this also may be said of eclampsia and rupture of the bladder, both of which are due to prolonged pressure by the growth. One case I find recorded long ago by Depaul, in which intestinal compression occurred, the patient dying with all the symptoms of strangulation of the intestine.

871 Beacon Street.

TREATMENT OF TUBERCULOSIS OF THE LUNGS.[1]

BY C. J. WHALEN, M.D., LL.B., CHICAGO.

The prevailing idea that tuberculosis is an incurable disease is accountable for the gross carelessness with which consumptive patients have been treated in the past. If the unfortunate had the means with which to procure a change of climate and surrounding conditions, he might recover. The remedy lies in prevention, rather than cure; still the disease, once established, must be treated, for many patients can be cured who have contracted it.

Many cures have been proposed for tuberculosis, from the rank concoctions of shameless quacks to the valuable remedies emanating from men of science. As a specific treatment in individual cases, creosote has been extensively used. Of the different forms of the drug, guaiacol has the best reputation. Each of the preparations of guaiacol has its advocates; I have always had better success with the liquid preparation. My rule has been to administer it in the following manner: beginning with five minims in capsule after each meal, the dose is increased one drop each day until saturation of the patient, at the same time watching the effect of the drug on the stomach and bowels. To saturate the patient is rarely possible by internal use, as the drug irritates the stomach, but saturation can be accomplished by administration by the mouth and externally, or even by the latter method alone. Guaiacol externally is rapidly absorbed, being detected in the urine fifteen minutes after local application; elimination continues for twenty-four hours, at the end of which time 60 per cent of the total quantity applied to the skin is found to have been passed by the kidneys alone. This shows that it is possible to saturate the organism without recourse to the digestive tract; indeed, I have had some of my very best results from the local application of the remedy. In a case recently under observation, guaiacol had been taken internally in large doses, without benefit. The substitution of external applications gave within a week nearly complete relief to the cough and fever.

Next to guaiacol I would place oil of cloves, given internally and in exactly the same manner as the guaiacol. I have repeatedly seen patients improve by taking oil of cloves, when guaiacol had failed to give relief, and this is likely to occur in patients suffering from digestive disturbances. To treat this disease successfully, it is necessary to respect the stomach. Creosote and guaiacol,

[1] Read before the North Chicago Medical Society, January, 1900.

improperly administered, are frequent causes of dyspepsia in tuberculous patients. In those cases that tolerate poorly the guaiacol administered internally, give oil of cloves and apply guaiacol externally, using from three to four drachms a day, as the case may require. Under this form of treatment cough is lessened, the appetite improved, and the patients gain in weight and strength.

Iodine is of some value in certain cases, when taken internally; it is inferior to guaiacol and oil of cloves, and is of most value when used by inhalation. Strychnine, arsenic, phosphorus, and cod-liver oil should not be overlooked, and combinations of these remedies with the different malt preparations have served the profession faithfully in the past. A combination of strychnine and arsenic given in maximum doses enhances the effect of other medicines and causes them to be better borne by the stomach. No general tonic gives better results than this combination. Cod-liver oil improves the nutrition, and if it is well borne it may be of distinct service, especially when there is emaciation. The same results may be obtained if the patient is able to take and assimilate daily several tablespoonfuls of cream. All cannot assimilate cod-liver oil, cream, or the malt preparations, because of irritation of the stomach. Of late I have been using red bone-marrow (Armour & Co.) in place of the malt and cod-liver oil. It is pleasanter to take and of easy assimilation, and its effects are quickly apparent. All tuberculous patients soon suffer from anemia, and by promoting the development of red blood-corpuscles, cell resistance to the tubercular organism is increased. It is by nutrition and oxidation that the progress of the disease is arrested, our aim being to improve the resisting force of the body. The importance of this remedy was first impressed upon me while treating some soldiers suffering from malarial cachexia. Where tissue changes and waste, with their resulting anemia, are progressing rapidly, the red bone-marrow is a valuable remedy, due to the ease with which it is assimilated and its retention by a delicate stomach.

The routine administration of alcohol early in tuberculosis is not advisable, but later in the disease it may be of benefit. It should be chiefly prescribed in the form of malt liquors which are relatively rich in nutriment, such as porter. Small amounts of good wine may aid in improving the appetite and general condition; champagne and whiskey may be used with advantage in some cases. The diet of the patient must be as nutritious as possible: meat, milk, eggs, farinaceous food, and butter are to be used chiefly, special care being taken that the body gets hydrocarbons and fat in sufficient

amount, as well as plenty of albumin. I have recommended patients to take, in connection with their bone-marrow, a large number of raw eggs, and while they are at first unpleasant to many, later they are relished by nearly all tuberculous invalids. In some cases I have been able to get them to take with benefit two dozen eggs every twenty-four hours. The stomach being the key to the situation in this disease, care should be taken that it is never used in a way detrimental to its owner; overfeeding or stuffing, so popular a few years ago, is not to be advised. Only so much as the stomach will assimilate should be given. Many of the special cures for consumption have their only value in the fact that in these places the patient takes a large amount of easily assimilable nutriment, like milk and kumiss.

The internal administration of remedies can be aided by inhalations, especially in cases where there is abundant expectoration. Dr. E. Fletcher Ingals (Diseases of the Chest, Throat, and Nasal Cavities, 3d ed.) says that they should always be given the preference in controlling cough; chief among the remedies he mentions for this purpose are iodine, carbolic acid, creosote, and oil of white pine. Nebulization of the essential oils, such as cinnamon, oil of cloves, oil of eucalyptol, thymol, and many others, is considered highly beneficial. I place formalin first among the remedies capable of lessening the expectoration and controlling the annoying cough of phthisis. It can be combined with iodine or other remedies, and may be used in strength varying from 2 to 25 per cent, depending on the patient's ability to stand a weak or a strong solution. These inhalations should be taken for fifteen minutes each morning and evening, if possible, and while inhaling the vapor the patient should be required to breathe deeply with about the normal number of respirations.

Moderate exercise, never amounting to fatigue, together with lung gymnastics, such as deep inspiration with forced expiration, and daily cold applications to the chest, followed by vigorous friction, are of great value in connection with other remedies.

The complications most likely to occur during the course of phthisis are diarrhea, night sweats, and hemorrhage. Often during the course of treatment patients have slight or severe attacks of diarrhea. These I have nearly always been able to control by bismuth, in doses of from 40 to 100 grains a day. In case this fails, acetate of lead combined with opium will nearly always give relief. The night sweats are usually controlled by atropine in doses of $\frac{1}{120}$ to $\frac{1}{60}$ of a grain given at bedtime. Where cases fail to respond to

atropine, agaricin in one-sixth-grain doses will frequently give relief if given before retiring. Where both atropine and agaricin fail, sulphonal in ten-grain doses sometimes proves satisfactory. In giving sulphonal, it should be remembered that its antihydrotic action continues for several days after cessation of the remedy. The value of cold sponging for relieving the troublesome night sweats should not be overlooked.

Hemoptysis as a rule requires no treatment. The patients should avoid exertion, and at the same time be given a placebo. In despondent or nervous patients, where there is much restlessness or coughing, morphine sometimes helps in controlling hemorrhage. Its power of diminishing the activity of the cerebral cells, allaying the irritability of nervous and muscular tissue, and lessening morbid mental activity, make it, when cautiously used, of great service. It also favors coagulation and prevents dislodgment of the clot by coughing or muscular exertion. Blood-pressure should be lessened by slowing the heart's action, and in cases where this cannot be accomplished by recumbency, together with saline cathartics, diuretics, and counter-irritation, I always resort to aconite, one minim being given every hour until complete relaxation of the arteries occurs. Veratrum viride and nitroglycerin have a similar effect. The internal administration of ergot is contraindicated, as it causes contraction of the unstriped muscle in the vessel wall, thus increasing the blood-pressure and hemorrhage. A few years ago, while giving ergot to a young physician for the relief of a pulmonary hemorrhage, as the amount of the drug was increased the hemorrhage became more profuse. After three days, when his condition became alarming because of the loss of blood, I discontinued the ergot and administered hypodermically $\frac{1}{100}$ of a grain of nitroglycerin; hemorrhage began at once to lessen, and after repeating the dose it ceased. It rarely happens that we have to resort to other remedies than cathartics and diuretics, combined with counter-irritation and perfect quiet in the recumbent position, but when this is necessary relief can always be obtained by the use of aconite or morphine.

As to the curative properties of tuberculin, the evidence is of a confusing and contradictory nature. A few cures have been reported, yet the consensus of opinion is that tuberculosis is not influenced by the serum treatment. My personal experience with some ten cases treated by this method leads me to believe that nothing can be accomplished by the use of serum in this disease. Experiments along this line may eventually result in the discovery

of a serum that will prove efficacious. At the present time the chief value of tuberculin is in treatment of lupus and in the diagnosis of bovine tuberculosis.

The Murphy treatment by intrapleural injections of nitrogen. The greatest number of patients treated by this method was reported in the *Journal of the American Medical Association* of October 14, 1899, these being Dr. Murphy's patients under the care of Dr. A. F. Lemke. The laxness of observation of the cases, which is so apparent from the histories given, leaves a great deal to be inferred by the reader. Fifty-three cases are reported, of which two died; two could not be injected on account of adhesions or other complications; in four no change seemed to result from treatment; five, judging from their histories, grew worse; two were not subsequently heard from; eight voluntarily left, or were advised to try a change of climate, and hence cannot be considered as improved by injections of nitrogen, although they were reported among the benefited; one case is reported as being improved, but no hope of cure was entertained. This leaves twenty-seven cases which are under observation in this climate. Of this latter number, a normal temperature, or a temperature never above 99°, was noted in a few instances; in this connection it might be mentioned that consumptive patients with low temperatures usually do well under any mode of treatment. Twenty-seven cases the writer claims were improved by injections of nitrogen. The average time these patients were under observation when this report was made was two and one-half months, which is too short to allow any definite inference to be drawn. The good results noted in some of these instances, such as absence of fever and night sweats, I believe to be due to a lessened absorption of ptomaines resulting from compression. I have treated five patients by this method, and have seen as many more who had undergone the same treatment elsewhere, and while some seemed to be much benefited by the treatment at first, later they relapsed. When this mode of treatment was announced I entertained great hopes of its curative effect, but regret to say that my experience with injections of nitrogen was disappointing.

There comes a time in many cases of tuberculosis when we have to consider the advisability of a change of climate. While it no longer plays the important part in the treatment that it did a few years ago, we know that some climates have advantages in individual cases over others. While there is no such thing as specific action of climate, a favorable termination in a large proportion of cases is brought about when they go to the mountains; while the

cure of tuberculosis in early stages is possible in all healthy climates, a large number of patients often doing well at home, when they voluntarily submit to the same precautions and régime as persons similarly afflicted do abroad. The good results attained by climatic changes are often due to the fact that the patient is away from work; there is less overexertion, he lives out-of-doors, and has plenty of air and sunshine.

In treating this disease, we have to remember that 75 per cent of tuberculous patients are unable to afford treatment in Colorado or New Mexico, and that we have to provide them with fresh air and sunshine nearer home and in a climate where they can earn a livelihood after their restoration to health. This hygienic home treatment of the consumptive can best be accomplished in sanatoria, where they can receive the necessary attention. Even in the fairly well-to-do, the question of sending the patient away may be a serious one and cannot be answered in a general way, but we have to consider what is the best thing to do under the circumstances. It may mean the breaking up of a home and family and depriving them of a livelihood. We have also to take into consideration the stage of the disease, the strength, vitality, and temperament of the patient, as well as his financial condition. Few people relish being sent long distances from home to regain their health, and they are inclined to look upon it as a form of exile. We must consider the effect of leaving family and friends upon a particular patient, for in addition to fresh air and sunshine there must be contentment. Is the patient likely to suffer from homesickness or be denied the comforts of home? are questions which should be uppermost in the minds of physicians when advising a change of climate. In those likely to suffer from *ennui*, he might better save them the expense of transportation to and from the health resort.

If it is finally settled that the patient should go away, we have next to consider what place will best fulfil the requirements. The selection of climate is largely one of experiment, and no one can advance a positive opinion as to the result. The difficulty in formulating exact rules is due in part to the various forms of the disease, its numerous complications, and, in part, to the varying constitutions of affected individuals. Persons with weak constitutions should never be sent to high altitudes, but should be directed to warm, sheltered places; on the other hand, for those with strong constitutions, a mountain climate is to be preferred. Generally speaking, tuberculous patients do best in warm climates with moderate elevation; extreme heat or moisture is not suitable for them, as a

rule. While the prevailing opinion has been that consumptives are more likely to be benefited in warm health resorts than in cold ones, I believe this opinion to be only partially correct. No degree of cold is necessarily contraindicated, for I have seen a number of consumptives do well in dry cold climates, and I believe they will nearly always do so, providing the altitude is suitable for the stage of the disease. We have it on the authority of Dr. Archibald Smith, a resident of Lima, Peru, that in the city of Lima, which is located twelve degrees south of the equator, consumption is especially prevalent and rapidly fatal, but that patients, if they go early to the Peruvian Andes, at an elevation of 7000 to 12,000 feet, mostly get better; the same is to be said of the results obtained by a residence in the high Alps of Switzerland. The excellent results obtained in our own Adirondacks and Rocky Mountains should not be forgotten in this connection.

The favorable effects of altitude are mostly due to the lessening of external atmospheric pressure, with consequent amplification of respiratory movements and an increase of the circulation of air in the lungs. This brings into use a large portion of the lung which is not used in respiration at the lower level; a greater quantity of blood enters the organ, thus increasing the heart's action and improving the circulation. There is increased activity of the skin and muscles of respiration, with increase of appetite and improvement in digestive function. The blood-count in men and animals shows increase in the number of red corpuscles and hemoglobin. Certain changes in locality seem to produce a similar effect.

Tuberculous patients in high altitudes are less liable to further infection, the climate being antagonistic to the tubercle bacillus. The freedom from bacteria lessens the danger of secondary mixed infection by the staphylococcus and streptococcus. I believe the streptococci are the cause of the greater part of the fever of tuberculosis. Whatever its mode of operation, it is a fact that altitude has a powerful tonic influence.

When sending patients away they should be impressed with the fact that climate will not do away with the need of care. Most physicians who have had much to do with consumptives can recall instances of disastrous results from allowing patients to follow their own inclinations in their visits to the various health resorts.

The land of sunshine, the ideal home for consumptives, is to be found in New Mexico; indeed, so pure and dry and free from germs is the atmosphere that meat exposed to the air will not decompose. The altitude, from 3000 to 10,000 feet, varies sufficiently so that a

suitable elevation may be found for any patient. The only disadvantage to be encountered is the lack of facilities for the sick. At present, suitable accommodations can only be found in a few cities, chief among which are Albuquerque, Santa Fé, and Las Vegas. Next to New Mexico, Colorado is to be considered as a home for consumptives. We find here many of the disadvantages encountered in New Mexico, and in addition the severity of the winters; however, the summers can always be spent here satisfactorily, and when necessary the invalids can spend the winter in a southern climate. Arizona, Wyoming, Montana, Utah, and the Dakotas all have their advantages as health resorts for consumptives. Whatever locality is finally selected, the patient should be impressed with the importance of remaining away from home for at least one, and better two, years, changing from a cold to a warm climate as winter sets in, providing it is found necessary. There are vast tracts of land in southern California, Texas, New Mexico, Colorado, Arizona, and other places where the air is dry with an abundance of sunshine, conditions which tend to prolong the life and restore the health of consumptives. It would be well for the State to have a consumptive colony in some favorable location to be operated for the poor, where the curable could be sent and helped to work out their salvation. These colonies would soon be self-supporting, or of little expense to the State.

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SUGGESTION WITHOUT HYPNOTISM AS A THERAPEUTIC AGENT.

BY HAROLD N. MOYER, M.D., CHICAGO.

In any discussion of suggestion as a therapeutic agent some mention must be made of the theories upon which it rests. There is a feeling that suggestion is a new discovery—a force that either did not exist, or was previously latent and has been called into existence by late discoveries. Suggestion, however, has existed ever since the nervous system has reached a plane of development beyond that of a simple reflex mechanism. The original studies of Mesmer in France and of Braid in England, exciting as they did a great deal of comment, and surrounded as the work of their followers was by many quackish concomitants, led to the whole subject being brought into disrepute, a condition that has prevailed until very recent times. Undoubtedly the hypnotizers of the end of the latter and the beginning of the present century believed that they possessed some peculiar force, which emanated from them and affected the subject. The uniformity of their results, the ease with which they were produced, made this the obvious explanation. Had this discovery of Braid and Mesmer been studied in a careful, scientific spirit, much would have been added to our knowledge of the nervous system. It is to be remembered, however, that psychology had not advanced to a plane that would admit of a correct classification of these phenomena. At the time, psychology was a mere collection of metaphysical introspections, its fundamental errors being a non-recognition of the unity of the nervous functions in animals and man, the former being spoken of as instinct and the latter as reason. The introspective school in addition had not studied morbid psychology, nor the development of mind as it is shown in the growth of the individual from infancy to adult life. In a word, psychology has been the last of all the great departments of human learning to yield allegiance to the inductive method. Perhaps in no department of learning has this method yielded greater results.

It was at this stage that the phenomena of Braidism received renewed attention. The studies of George M. Beard in this country directed the attention of the scientific world to the phenomena of hypnotism. At the same time two schools in France, that of Salpêtrière and Nancy, began the study of the subject. Under Charcot extraordinary experiments were made in the wards of La Salpêtrière. The abundant material of this hospital furnished such a remarkable collection of hysterical degenerates that it is not surprising that the

great neurologist should come to the conclusion that hypnotism was essentially a neurosis, and if it could be produced in a person it was very good evidence that that individual had an unstable nervous organization. A much more correct view prevailed at Nancy, where the essential idea of "suggestion" was evolved. There it was recognized that all people were more or less subject to suggestion. Some are so easily impressed that they can be thrown into a deep sleep by very slight suggestion; others, again, are only rendered slightly somnolent; and still others resist every effort to secure sleep. It was also recognized that suggestion could be made without hypnosis nearly as efficiently as with it, and a fair statement of the views of the Nancy school would be, that all persons are subject to suggestion, but the effect of a given impression varies enormously in different individuals. This view has practically been accepted by leading psychologists and neurologists the world over.

A fundamental error of the older psychologists was the confounding of mind and consciousness, an error which still lingers. The best physiologists of the present time make no fundamental difference between reflex acts, the functions of the spinal cord, the basal ganglia, and those of the highest nervous centers. They fully recognize that many psychical processes are carried on below the plane of consciousness. Such a view alone gives an explanation of double consciousness and certain other morbid phenomena in which consciousness is very greatly disturbed. With this conception of a subconscious mental state it is easy to understand how suggestion works. It will be seen that it is by no means necessary to put a person to sleep, but under such circumstances it is apparent that suggestion would work much more efficiently and more directly in reaching the subconscious mental process. Hypnosis eliminates consciousness, and in the degree to which consciousness is in abeyance and partial sleep produced is autosuggestion eliminated. This is based entirely upon theoretical conclusion, and doubtless it is true, but there is not a little evidence that goes to show that suggestion may be invoked just as efficiently without hypnosis as with it; but it would seem that the more self-cousciousness is in abeyance, the more efficient the suggestion. However, where the patient's own consciousness comes to the aid of the person making the suggestion, there is just a possibility that suggestion may be more efficient without the hypnotic state. If an individual comes to a physician, for example, in the full belief that the physician is in possession of a remedy or treatment that will infallibly cure a certain trouble, undoubtedly the effect on the patient's mind of suggestion along the lines of this

thought is more efficient when the person is conscious than if he were in a hypnotic state. On the contrary, if the patient were opposed to the suggestion, it is self-evident that hypnosis, if it can be induced, would lend additional aid in making the suggestion operative.

Suggestion without hypnosis, in my judgment, plays a very important rôle in the treatment of disease, and imports into our therapeutic discussions a very uncertain element. Medical literature is replete with observations in which the influence of the mind upon the body and the so-called vegetative functions is set forth in a way that does not admit of denial. The question whether this force can be harnessed, and so directed as to be of value in therapeutics, is one that is still unsettled. The more, however, that it is studied, the more its value becomes apparent, and he who mixes his drugs with a large percentage of suggestion will secure the greater success in their application.

In my own judgment suggestion, well directed, and above all patiently and systematically applied, forms a very important element in the treatment of many diseased states. Hypnosis, on the contrary, has many objectionable features. It is by no means easily induced excepting in those individuals with very unstable nervous systems, and in these it is quite certain that the effects are harmful. It is in exactly this class of cases that suggestion, without hypnosis, can be most efficiently employed, so I believe there is little necessity for inducing a hypnotic state. I do not pretend to say that it should never be done, but I do not believe that it should be undertaken in a routine way, and I believe that it should be practiced by medical men alone.

103 STATE STREET.

BOOK REVIEWS.

A Dictionary of Medicine and the Allied Sciences. By Alexander Duane, M.D. Third Edition. Philadelphia, New York, and Chicago: Lea Brothers & Co. 1900.

This work comprises the pronunciation, derivation, and full explanation of medical, pharmaceutical, dental, and veterinary terms. In the introduction the author states that the plan of the work consists of a series of major titles or primes, each beginning a separate paragraph and printed in heavy type, and of a series of subordinate headings placed in the body of the paragraph. The subordinate headings are distinguished by being printed in (*a*) heavy type when they are of an importance nearly equal to that of the major heading; (*b*) italics, or occasionally in small capitals, when they are of secondary importance, and particularly when they represent subdivisions of a secondary heading.

The arrangement of the main headings is strictly alphabetical. Titles consisting of two or more words are usually entered in two places. In spelling the author has endeavored to follow the best usage regardless of analogy. Where, however, authorities and usage differ, that usage is adopted which conforms most closely to the analogy and derivation of the word.

It has been the aim of the author, in the successive editions of this book, to include every word that the student or physician will be likely to meet with. The writer tells us that the vocabulary of to-day is so extensive that the size of the work was only kept within reasonable limits by the most careful omission of obsolete words. Practical utility, rather than historical tradition, is sought; hence the work differs from most of its contemporaries in omitting words which are nowadays found only in dictionaries. This has a double advantage, since it not only secures space for more useful material, but facilitates consolidation.

The above sets forth the aims and plan of the author, and an examination of the body of the work shows that these efforts have been conscientiously fulfilled. We like the idea of following general usage in the preparation of a dictionary, rather than a preconceived notion of what ought to obtain. The vocabulary of medicine, like that of other divisions of the language, is undergoing change. We believe that such alterations as take place are improvements, though perhaps they are not as rapid as reformers and world-betterers could wish. The most of us, however, are content with moderate changes in the language, and are quite willing to leave something for the future to correct. Judged upon these lines, the work before us is an excellent contribution to the literature. As the author says, a careful process of elimination has been exercised, and one will hardly find a single word that is not in current use in medical literature. This may be an objection from the standpoint of completeness, but is a vast advantage for the student, or the one who is looking for a compact work. There are eight full-page colored plates—one giving a diagram of the human embryo modified from His's plates; another the cerebral cortex; another of urinary sediments and casts; two plates showing the various forms of the malarial parasites; and one giving the appearance of blood which has

been triple-stained, showing the changes which take place in the corpuscles. There are no other illustrations. The work is abundantly supplied with tables and contains much collateral descriptive matter, which adds considerably to its value.

SURGICAL ANATOMY. By John B. Deaver, M.D. Volume II. Philadelphia: P. Blakiston, Sons & Co. 1900.

This, the second, volume of Deaver's treatise on human anatomy in its application to the practice of medicine and surgery is fully equal to the volume which preceded it. Volume I dealt with the upper extremity, back of neck, shoulder, trunk, cranium, scalp and face. Volume II discusses the neck, mouth, pharynx, larynx, nose, orbit, eyeball, organ of hearing, brain, male perineum and female perineum. In our review of the first volume, we spoke of the beautiful way in which the work was illustrated, the sumptuous character of the binding, and the remarkable clearness with which the plates and text were printed. Volume II has 169 full-page plates. They are half-tone illustrations printed on a tinted background, and are remarkable for the accuracy and clearness of the drawing. They are the handsomest plates which we have yet seen produced by the half-tone process, and they are quite as sharp and clear in outline as though done upon steel.

In discussing various topics the author is not content with mere illustration, but accompanying each anatomical plate is a descriptive text giving the various operations, together with plates which show the anatomical relations in the various steps in making ordinary dissection in the performance of an operation. The work when compiled will form a treatise on anatomy, but the topics will be discussed in their purely surgical relations. While the subject is studied from a special standpoint, there is really very little that is omitted that would be useful to the practical anatomist.

In discussing the dissection of the neck, the author speaks not only of the anatomical relation of the structures from without inward, but also of the relation of the parts which lie above and below. To illustrate the completeness of the work, we might mention the fact that thirty-six pages are taken up with the discussion of the ligation of arteries of the head and neck. Included in this chapter are ten plates, in which all of the typical ligations with the anatomical relations are accurately shown. The operations upon the nerves of the head and neck are not nearly as complete, but these include several pages of descriptive text with four plates. That portion of the work dealing with the pharynx, nose, and mouth is especially full and complete, and the illustrations are chosen with special reference to giving one an adequate idea of the anatomy of the parts. Many of them differ from the conventional aspects with which these are represented pictorially. Sagittal and longitudinal illustrations are employed with frequency. The chapter on the orbit and the eye forms almost a monograph upon the anatomy of these important structures. The same is true of that dealing with the ear.

FRACTURES. By Carl Beck, M.D. Price, $3.50. Philadelphia: W. B. Saunders & Co. 1900.

This last work on the treatment of fractures discusses the subject almost entirely from the standpoint of the Roentgen ray diagnosis. The writer says that the splendid schematic representations of fractures found in the older

works were made from dissections, and consequently during their preparation there was more or less disarrangement of fragments. The Roentgen ray depicts these outlines and all others undisturbed as they are in life. He says that the greatest usefulness of the rays is in the recognition of fractures. Accuracy takes the place of ignorance and doubt, and painful manipulations cease to be necessary for diagnostic purposes. From what is said in the introduction, one is led to believe that the beginning and end of diagnosis is furnished by the Roentgen ray.

The early part of the work deals with fractures in general, and includes classification, statistics, and diagnosis. The process of repair and the formation of callus is described. We are told that the treatment of fracture is governed by a correct diagnosis. Many fractures escape recognition, and in some there is no displacement, so that all that is required is to protect the injured limb. In all cases where there is displacement, exact reposition must be obtained, followed by proper fixation. The writer says that while these have been the commonly accepted dicta in the treatment of fractures, they are often violated. The dangers to the soft tissues, he contends, are due to non-reduction, as perfect reduction relieves pressure. So far as possible reduction should be secured by the fingers of the surgeon. This may commonly be done without an anesthetic, but if necessary the latter should be employed. Temporary dressings should be used to admit of transportation of the patient, which should be followed very soon by fixed dressings. The writer is much in favor of plaster.

In speaking of the ambulatory splint, the author says that this method of treating fractures is advantageous, as it prevents atrophy of muscles and delayed union does not occur. The advantages of the method are obvious, but there is great difficulty in keeping the patient under control in practice. Massage is spoken of as a splendid adjunct in the treatment of fractures, but is only practicable in those cases where there is no tendency to displacement. The writer speaks rather disparagingly of the open method of treating subcutaneous fractures, except in those cases in which, like fractures of the patella and olecranon, there may be wide separation of the fragments.

Part II is devoted to a description of the fractures of special regions. Almost every fracture is illustrated by skiagraphs. The work closes with an appendix on the practical use of the Roentgen rays. The work derives its chiefest value from the fact that it is a study of fractures from the standpoint of the latest addition to our means of surgical diagnosis.

CONTRIBUTIONS FROM THE WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE. Philadelphia: Published on the Phœbe A. Hearst Foundation, University of Pennsylvania. 1900.

This sumptuous volume of 479 pages, printed upon heavy paper with extra wide margin, and beautifully illustrated, forms a memorial volume of the late William Pepper. The frontispiece is an excellent portrait of Dr. Pepper. The volume is made up of thirteen monographs, together with a list of the previous contributions from the laboratory.

The first is on two cases of muscular dystrophy with necropsy, by William D. Spiller. He comes to the conclusion that cases of muscular atrophy occur which present the well known local manifestations regarded as characteristic of the various forms of muscular dystrophy. In a large majority

of these cases the spinal cord and peripheral nerves are normal. In other rare cases presenting the clinical features of muscular dystrophy, the nervous system is more or less involved. The histologic changes in the muscles are not peculiar to any form of atrophy. It is proper to regard muscular dystrophy as a disease usually distinct from spinal muscular atrophy, but transitional forms connect the myopathic and myelopathic types.

Another case reported by Spiller is that of amyatrophic lateral sclerosis, in which degeneration was traced from the cerebral cortex to the muscles.

A. E. Taylor contributes the longest monograph in the volume, his contribution forming one of the most important of recent communications dealing with leucemia. It includes a study of sixteen cases, five being of the lymphatic type, two of which were acute cases, and the remainder of the leucocytic type.

Alfred Stengel presents a short but important study of the pathology of the erythrocyte. He says that the first stage of degeneration in this structure is a disturbance of the chemical combination of the hemoglobin and stroma. This is shown by slight areas of decolorization, or irregularity of contour. Next the hemoglobin is completely altered or removed, leaving areas of decolorization which appear as granular streaks or particles. Occasionally the hemoglobin separates without distinct decolorization of the corpuscles. Complete decolorization, with formation of the shadow corpuscles of Ponfick, is the last stage in this simple form of degeneration.

D. L. Edsall gives an excellent description of the influence of immoderate water-drinking upon metabolism and absorption. C. H. Frazier has an experimental study of the etiology of appendicitis.

Clinical Lectures. By W. Arbuthnot Lane, M.S. Price, 6s. 6d. London: The Medical Publishing Company, Limited.

To those who are familiar with the excellent lectures of Mr. Lane that have appeared during the last few years in the *Clinical Journal*, an opportunity to secure a bound volume of his excellent communications will be welcome. They have appeared mostly during 1895-6-7-8 in the *Clinical Journal*, with the exception of one, on antrectomy, which appeared in the *Archives of Otology* in 1892. The subjects dealt with are cleft palate, adenoids, treatment of simple fractures by operation, diseases of joints, operative treatment of cancers, acquired deformities, hernias, etc.

One of the most interesting of the lectures is upon the consequences of wearing boots and the deformities which are produced by defective coverings for the feet. The common hallux valgus is described, as well as hammer-toes and other deformities. An interesting study of the writer's is his reference of certain deformities of the skeleton to imperfect foot covering, and the consequent altered position which the spine and pelvis must assume, due to imperfect distribution of weight upon the feet. Among these he mentions lateral curvature and dorsal excurvation. He refers rather pessimistically to the influence which fashion exerts and probably will continue to exert upon the character of foot coverings. The sandal, as worn by the ancients, is probably the best substitute for walking barefooted. Recently a moderate imitation of the sandal has been revived by an alteration of the outline of the inner margin of the sole to allow of the inward movement of the great toe in adduction of the feet. It is probable that if the conservatism of women as regards the median

pointed toe can he removed, and shoemakers are taught something about the structure and functions of the part they treat so cavalierly and painfully, men, and possibly even women and children, may be shod to their advantage and not to their very serious detriment.

Many of the lectures are strikingly original in thought and arrangement, and are handsomely illustrated. Those interested in surgical topics will find the volume of special interest.

THE YEAR-BOOK OF THE NOSE, THROAT, AND EAR. Edited by G. P. Head and Albert H. Andrews. Chicago Medical Book Company, Chicago. 1900.

This publication of 274 pages is composed entirely of abstracts of journal articles, the most of which are condensed from the originals, though a few are credited to the abstract departments of some of the special journals in this field. We are not sufficiently acquainted with the current literature on the subject of which it treats to state how well or how ill the abstracts represent the latest advancements in laryngology and otology. Some of the abstracts are certainly well done, and to those who wish a work of this kind it will certainly be useful. We doubt that it is very much better than an average bound volume of a special journal which includes the work of a year.

THE ANATOMY OF THE BRAIN. A Text-book for Medical Students. By Richard H. Whitehead, M.D. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1900.

ANATOMIE CLINIQUE DES CENTRES NERVEUX. By Dr. Grasset, Librairie J. B. Bailliere et Fils, Paris. 1900.

The work of Whitehead contains about one hundred pages and is a description of the anatomy of the brain, brief and concise, taken from the standard works on anatomy and those which deal especially with the structure of the nervous system. Edinger, His, and Van Gehuchten have been extensively drawn upon in its preparation. The neuron theory is nowhere strikingly in evidence, though occasional references to it are found through the text. There is nothing in this little work that will not be found in other text-books, but it is a well arranged and adequately illustrated syllabus of cerebral anatomy.

Dr. Grasset gives us a study of the arrangement of the nervous system, based entirely upon the neuron theory and the development of the nervous centers. The subject is studied entirely in relation to the symptoms and signs of disease as they commonly present themselves in the patient, and not according to the arbitrary divisions of the morphology of the nervous system. Unquestionably, the latter is less useful for the practicing physician. Most students of clinical medicine ultimately come to look upon anatomy of the nervous system entirely in its clinical relations.

MANUAL OF OBSTETRICS. By A. F. A. King, A.M., M.D. Eighth Edition, Revised and Enlarged. Price, $2.50. Philadelphia and New York: Lea Brothers & Co. 1900.

The last edition of King's Obstetrics appeared two years ago. The present edition has been revised and improved by the addition of forty-one engravings. The work is still elementary, no attempt having been made to develop it into a

systematic treatise. The first edition of King's Obstetrics appeared in 1882, and then, as now, consisted of an outline of the rudiments and essentials of the obstetric art, prepared especially for undergraduates.

The first six chapters are devoted to a description of the pelvis and generative organs. This is followed by an account of the hygiene and complications of pregnancy. Then there is a description of labor, together with the usual obstetric operations and the complications which follow delivery. The work closes with a chapter on obstetric jurisprudence.

The chapter dealing with cutting operations on the mother has an excellent description of symphyseotomy. The operation of Cæsarian section is spoken of most favorably, particularly when it is an operation of election, and not as a last resort in patients very much reduced by efforts at instrumental delivery.

On the whole this last edition of King's Obstetrics is an excellent and practical work. While the author lays no claim to the production of anything more than a manual, still many subjects are quite as fully considered as they are in works with a more ambitious title. The book contains 264 illustrations.

AN ATLAS AND EPITOME OF SPECIAL PATHOLOGIC HISTOLOGY. By Docent Dr. Hermann Dürck. Translated from the German. Edited by Ludvig Hektoen, M.D. Sixty-two Colored Plates. Price, $3.00. Philadelphia: W. B. Saunders & Co. 1900.

This small volume forms part of the series of atlases which have been issued by W. B. Saunders, all illustrated by colored lithographic plates. Indeed, the purpose of the book is largely to exploit plates which are exceedingly clever reproductions in colors of microscopic sections. Some of them are quite diagrammatic, but in the main the actual appearances are quite faithfully reproduced. The book has 158 pages of text, including an index. A considerable portion of this is taken up with a description of the plates, and only so much text is included as will furnish a brief running commentary on the illustrations. The current volume deals with the circulatory organs, respiratory organs, and gastrointestinal tract. It is to be followed by two other volumes, one dealing with special pathologic histology and the other with general histology.

EDITORIAL COMMENT.

THE DIFFICULTIES OF DEALING WITH THE PLAGUE IN SAN FRANCISCO.

The Public Health Reports of the Marine Hospital Service for July 6, 1900, contain a very interesting letter from Surgeon J. J. Kinyoun which throws some interesting side-lights upon the epidemic of plague which has prevailed in San Francisco for some time, and on the difficulties in dealing with it. A striking instance of the power of the business world in suppressing all references to the plague is the fact that at this writing there has been no reference in the lay press to the prevalence of plague in the United States. We are treated with all sorts of glaring headlines anent the wars in China and Africa, but singularly little or no attention has been paid to this startliug epidemic.

When Surgeon Kinyoun was notified and requested to confer with the local health authorities, he immediately called upon the Honorable Ho Yow, the Chinese consul-general in San Francisco. A conference was had with the latter, together with prominent residents of the Chinese quarter and the official representatives of the Six Companies. After thoroughly canvassing the matter, it was agreed that the best solution of the difficulty was in advising all the residents of the infected area to submit to inoculation with the Haffkine prophylactic. The representatives of the Chinese residents all agreed to recommend the inoculation by proclamation in the infected quarters. As soon as this result was ascertained, several physicians who practice in the Chinese quarter spread the report through Chinatown that the method was very dangerous and had killed a number of people upon whom it had been tried. The circulation of these rumors nearly led to a riot, and a demand was made upon the officers of the Six Companies to submit themselves to inoculation, providing they believed that it was harmless. This the officers refused to do, and a similar riot was started; and these officers had to seek safety in flight. There was a demonstratiou about the Chinese consulate which might have resulted in harm to the inmates, in the absence of adequate police protection.

The local board of health attempted a house-to-house inspection of the Chinese quarter, and coincidentally it was determined to offer the inoculation to those who would accept it. When the inspection

was undertaken, all the residences and stores were closed, so that it amounted to a mere procession in the streets, and but one Chinaman was inoculated during the day. This was the editor of a Chinese daily newspaper, who had hoped in this manner to overcome the prejudices of his race. As a result of his self-sacrificing efforts he was chased by a mob to his residence, where he was compelled to remain in seclusion for several days. During all this time the coterie of white physicians and others were circulating all kinds of rumors among the Chinese as to the direful effects of the inoculations. A circulating sheet was to the effect that health inspectors were dangerous people and were liable to poison them, not only by inoculation, but also by food and water. In all, fifty-eight Chinese, five hundred and thirty Japanese, and two hundred and thirty-four Caucasians were inoculated. Much time was lost in getting the Chinese to submit to house-to-house inspection. They were told that permits would be given to inspect the entire quarter, but it was evident that the delay was only for the purpose of obtaining time to invoke the courts to further obstruction of the efforts of the health authorities. Erroneous statements frequently appeared in the press of San Francisco, and the truth regarding the plague situation was never published.

Surgeon Kinyoun on the whole is of the opinion that the administration of the Haffkine prophylactic has been a failure, with the possible exception of the five hundred Japanese, whose condition and mode of life are not far removed from those of the Chinese, thus eliminating a possible source of the plague.

The trials attending the plague in San Francisco accentuate the statements made in former issues of this journal that the difficulties of dealing with the plague in this country would be very considerable if it once obtained a foothold. We early expressed the opinion that the present epidemic of plague was destined to spread over almost the entire civilized world, and this at a time when most of the journals that referred to the plague were assuring people that Caucasians had little to fear. At the present time there are very few who have given any attention to the matter, but we believe that there is danger of the plague extending over the entire world, and that the so-called racial immunity of the whites is a myth, as has been proven in the epidemics at Rio, Santos, Sydney, and Oporto.

The chief difficulty in dealing with the plague is our want of knowledge as to how the infection is spread. It is believed that rats are an important means to this end, but this rodent is an extremely elusive individual, who is but a feeble respecter of

sanitary regulations. Many writers have the greatest confidence in the Haffkine prophylactic, and believe that the efficient use of inoculations will stamp out the plague wherever it appears. This view is enthusiastically upheld by French writers and the officials of the Pasteur Institute in Paris. Its failure in San Francisco, together with the opposition which was developed to it, shows the difficulty of dealing with the plague by this means. It will be noted in Surgeon Kinyoun's report that he directly attributes, in a large part, the opposition to the treatment as being due to the rumors circulated by the white physicians practicing in the Chinese quarter. We may delude ourselves in the belief that these difficulties will be inherent alone in Chinatown, yet there is not a city in the United States of any size which has not a large section peopled by those who are quite as fanatical as the Chinese, and who would resist inoculation quite as effectually. There are not a few physicians in Chicago who would pronounce such a method of inoculation a dangerous experiment, and in effect, the injection of "dead and dying" material into the blood of the unfortunate people. We could name several medical journals that would strongly support the same view, and thus furnish a foundation for an active crusade against any health board which would undertake to enforce what is probably the only efficient means of dealing with an epidemic of plague, if it is once started.

In the meantime, we cannot too earnestly urge upon our health authorities the necessity of cleaning our cities, and a large proportion of the funds appropriated for that purpose should be used in the poorer quarters in tearing down rat-infested tenements, replacing wood sidewalks with stone, and, so far as possible, exterminating the places which harbor rats.

THE ROUTINIST.

William Osler, in a recent address on the importance of post-graduate study, delivered at the opening of the Museums of the Medical Graduates' College and Polyclinic on July 4, 1900 (*The Lancet*, July 14, 1900) has some exceedingly valuable things to say upon the routine practice of medicine. He speaks of two great types of practitioners, neither of which are common in the pure form, but he says that into the clutches of routine the majority ultimately come, the mind like the body falling only too readily into the rut of oft-repeated experience.

"Year by year we follow the same plan in practice, give the same drugs, and settle down into routinists of a most commonplace

type. Last year I was called into a town in Pennsylvania, and having to wait until late in the evening for my return train, I insisted, as is my wont, that the medical man should carry on his daily work and allow me to help him if possible. An afternoon round among patients, chiefly of the mechanic class, showed me a shrewd, cheery man, who in twenty years had gained the confidence and esteem of his patients. Kindly, hopeful words, very sensible directions about diet, and some half-dozen drugs, seemed the essential in his practice. In the evening I saw him dispose of a dozen patients at an out-door dispensary rate; the examination was limited to the pulse, the tongue, and sometimes the throat. The dispensing, which was of the most primitive sort, was done at the table, on which stood four or five tin and paper boxes containing large quantities of calomel, soda, antipyrin, and Dover's powder. Other drugs, he said, were rarely necessary. He never used a stethoscope; he had no microscope or instruments of precision, other than the thermometer. In reply to my questions he said 'that he rarely had to make an examination. If the patient has fever, I send him to bed; if there is edema, I ask for the urine. Of course, I make many mistakes and I sometimes get caught, but not oftener than the other fellows, and when I am in serious doubt I ask for a consultation.' This was a man of parts, a graduate from a good school, but early in his career he had become very busy, and gaining the confidence of the people, and having much confidence in himself, he had unconsciously got into a rut, out of which, at forty, only one thing could lift him—a prolonged course of additional study. This is by no means an exaggerated picture of a routinist in general practice. We have all our therapeutic ruts, and we all know consultants from whom patients find it very difficult to escape without their favorite prescription, no matter what the malady may be. Men of this stamp gain a certain measure of experience, and if of a practical turn may become experts in mechanical procedures, but to experience in the true sense they never attain. In reality they suffer with the all-prevailing vice of intellectual idleness. It is so much easier to do a penny-in-the-slot sort of practice, in which each symptom is at once met by its appropriate drug, than to make a careful examination and really to study the case systematically. Much depends on a man's mental constitution, but much more on the training he has had. If, when a student, good methods are not acquired, it is very hard to get into proper habits of work in practice.

"After all, no men among us need refreshment and renovation more frequently than those who occupy positions in our schools of

learning. Upon none does intellectual staleness steal 'with velvet step, unheeded, softly,' but not the less relentlessly. Dogmatic to a greater or less degree all successful teaching must be, but year by year, unless watchful, this very dogmatism may react upon the teacher, who finds it so much easier to say to-day what he said last year. After a decade he may find it less trouble to draw on home supplies than to go into the open market for wares, perhaps not a whit better, but just a wee bit fresher. After twenty years the new, even when true, startles, too often repels; after thirty—well, he may be out of the race, still on the track perhaps, even running hard, but quite unconscious that the colts have long passed the winning-post. These unrefreshed, unregenerate teachers are often powerful instruments of harm, and time and again have spread the blight of a blind conservatism in the profession. Safely enthroned in assured positions, men of strong and ardent convictions, with faithful friends and still more faithful students, they too often come within the scathing condemnation of the blind leaders of the blind, of those who would neither themselves enter into the possession of new knowledge, nor suffer those who would to enter."

THE AGE LIMIT IN THE TEACHING AND HOSPITAL STAFF.

In the Constitution of the United States it is stated that the President of this Republic shall be not less than 45 years of age. It is evident that the founders of the Government thought the supreme office should be placed only in the hands of a man of mature judgment and one who had some of the conservatism of age. There is no mention of a period beyond which a man would be considered too old to fulfil the duties of president. It is evident that this was not thought to be a contingency that ought to be provided for, and in no case, so far as we are aware, has a man been elected to fill the important office of president who was markedly senile or in his dotage. The age of senility is variable, and there is no general statement of greater truth than that a person is as old as his arteries. This saying expresses the general failure in nutrition that comes with advancing age, and is due to a rigidity of the smaller blood-vessels, which, to a certain extent, impairs the protoplasmic activity of the cells. This change, once set up, marks the person as senile, even though it comes as early as 40. The same process may be delayed and the nutrition of the body preserved with great vigor until long after 70. Both extremes are exceptional, and usually the decade from 60 to 70 marks the advent of the senile period.

We are surprised that the spectacle sometimes presented in the hospital amphitheater of the trembling hand of the aged surgeon attempting to operate has not suggested the advisability of an age limit for the hospital staff. Even if the connection between the hospital and the old surgeon or physician is not wholly severed, he should be at a certain period relegated to the position of consultant, with its less onerous duties. We are aware that it would be difficult to formulate an exact age limit at which the hospital physician should be retired. As we have before said, some men are younger at 65 than others at 55, and the adoption of an arbitrary age limit, say 65, would relegate some men to the rear long before their periods of usefulness as active members of the hospital staff had ceased. In the adoption of a rule of this sort, however, the greatest good to the greatest number should be considered. While in some instances hardship may be enforced, in other cases we should be saved the unpleasing spectacle of men keeping positions which they are no longer capable of filling. It is really of advantage to the men themselves, as in this way danger of marring a great career by senile performances is done away with.

What is said of hospitals would apply to the teaching force of our colleges. While in many instances a man is able to successfully carry his work along until the age of 70, or often past that period, there are comparatively few men that would not be distinctly benefited by having their teaching burdens removed at say 62, or at most 64, years of age. This would enable most of them to retire at the height of their powers, with credit to themselves.

CERTAIN OVERLOOKED FACTORS IN CONSTIPATION.

The first of these to which we would direct attention is the varying frequency of bowel movements in different individuals. There is no standard, and it is impossible to always say what is normal and what is abnormal. The average practitioner, we are quite sure, has fallen into the error of regarding the daily stool as approximately the standard of health. Doubtless this is near the fact if we consider a large number of persons, but it is far from true when applied in an individual case. There are persons who commonly have two or even three movements of the bowels in twenty-four hours. This condition is normal for them, and they are to be considered healthy; the change to a single daily movement might be attended with some discomfort.

Again, it is quite certain that bowel movements may be much

less frequent than once in twenty-four hours, and yet be quite normal for an individual. In the writer's experience was that of a man of middle age, who all his life had regular bowel movements at intervals of thirty-six hours; it was evident that this period was perfectly normal for this individual. Not infrequently patients are met with who have bowel movements every second day, and some may go three days, or perhaps even longer, with no suggestion of ill health or abdominal distress. It is difficult to say just what shall be the limit beyond which constipation is said to exist. A good plan is to reject all rules and be guided by the individual case, recognizing that a given frequency of stool in one person may not show ill health, while in another it indicates a constipation calling for vigorous treatment.

This daily stool, as a necessity for health, is an idea that has pervaded the laity as well as the profession, and much will be gained if there is a recognition of the fact that more and less frequent stools may be quite normal for the individual. Some idea may be obtained of what is normal in the particular case by interrogating the individual. This often brings out the fact of a certain *regularity*, and this is the essential thing in the diagnosis. Constipation is always characterized by irregularity in the bowel movements as well as an infrequency in their number. The *change* from the normal habit of the individual and the fixing of the time when this took place are valuable points. In the treatment of cases of this condition, the effort should not be to bring the patient to an arbitrary standard, but to a condition normal for that individual.

Another cause too much overlooked is the mechanical structural defects in the sigmoid and rectum. The newer methods of inflating and examining these parts have thrown a flood of light upon many cases of constipation. These mechanical obstructions are relatively infrequent, but they occur often enough to warrant a thorough examination in all cases which do not yield to simple remedies. Whether the rectum has valves we shall not attempt to decide, but it is certain that it does contain mucous membrane which is naturally redundant and falls into folds or plicæ. These, when invaded by a pathological process, may form constrictions, leading to what some writers call "obstipation," a term used to designate sluggishness of the bowels due to mechanical causes.

Unquestionably, the sigmoid is frequently the seat of organic changes which interfere with the function of the lower bowel. In our last issue we abstracted a description of two such cases, in which diverticula formed tumors of considerable size, accompanied by obsti-

nate constipation. We feel that we cannot be too emphatic in urging a thorough examination of the lower bowel in obstinate cases of constipation. It will not do to limit the examination to a mere digital exploration of the rectum, but the rectum should be "ballooned" in the knee-chest position.

CHOLECYSTITIS IN GALL-STONES.

A few years ago the disease to be pronounced mechanical above and beyond all others would have been gall-stones. The older writers had no very definite theory regarding the origin of gall-stones. Budd, in his clinical work on diseases of the liver, said that they probably had their origin in inflammation of the hepatic ducts, which in consequence became closed; the bile stagnated and became inspissated by the absorption of part of its water, and some of its constituents were precipitated, forming small, dark-colored granules. These granules were cemented by mucus secreted by the coat of the ducts so as to form a small calculus. This writer, whose professional work was carried on during the early part of the present century, recognized the importance of inflammation in the development of these concretions. He makes no mention of the causes of the inflammation, and it is here that the pathology of later years throws considerable light upon pathogenic results which follow the formation of gall-stones. It is probable that many cases are quite innocuous, and there is a possibility that gall-stones of considerable size may be passed without causing grave symptoms. The relation of microorganisms to this condition is being more and more appreciated. For example, experimental appendicitis caused in rabbits by the ligation of the appendix has a direct bearing upon the relation of infection in occlusion of the gall-ducts. Studies upon the appendix of rabbits show that when it is ligated so that the lumen is occluded, there follows a rapid inflammation of the mucous membrane. The colon bacillus is universally present in the appendix of the rabbit, and within a few hours after inoculation is made these organisms assume extraordinary virulence. From being a comparatively innocuous germ, they assume marked pathogenic properties. It is probable that the same conditions are found in the biliary passages. The colon bacillus is quite universally present in the intestinal tract, and it is probable that this or other infection, when it gains access to the biliary passages, due to catarrhal inflammation in other coats and the consequent alteration in their secretion, may remain comparatively innocuous for years; suddenly a swelling

takes place, there is occlusion of the biliary passages and damming up of the bile stream, and sometimes jaundice, but in any event there is a marked increase in the pathogenic activity of the germs found in the bile-duct. So long as the communication between the gall-bladder and intestine is open, inflammation is not set up, but the occlusion of these passages is followed by a pathogenic activity of germs previously harmless.

CANCER REMEDY.

There lies upon our desk a pamphlet emanating from the classic precincts of Boylston Street, Boston. It reflects the benevolence of most of this class of literature, for we are told that the remedy is so delicate in its nature, and the process by which it is manufactured is so complicated, that it is absolutely necessary for the people who have the matter in charge to control and personally supervise the manufacture of the fluid. They kindly put it up in different relative strengths; that which is most usually employed is known as "No. 3." All strengths of the remedy are supplied at the same price, viz., $30 a month to the medical profession. It is not stated whether one month's supply is sufficient to treat all of the doctor's cancer cases, or whether it is only sufficient for one case. It is to be feared that some ill-advised members of the profession will manufacture the remedy and thus damage their patients, as we are told that the solution is derived from a union of hydrocarbons and a dimethyl ketone, to which are added essential oils forming a chemical solution represented by the formula $C_{27}H_{17}O_2$.

There is a reproduction of a short article taken from the *Boston Transcript* of April 25, 1900, headed "An Efficient Cancer Remedy;" another is from the *Boston Herald* of April 18, 1900, "Cancer Cure Demonstrated." We are further informed that there was a demonstration of this method before forty members of the local profession, about thirty cases being presented for examination.

Chicago has had much to be ashamed of in the way of medical quackery, and our "Independent Medical College" and its numerous aliases have given her an unenvied reputation the world over as having one of the most famous diploma mills ever erected. Up to date, however, she has had no Simon-pure cancer cure, and it is really not a little disappointing for us to learn that "dimethyl ketone" has been discovered in Boston. Some little consolation is to be found in the fact that we all may profit by the remedy, at $30 per month.

DERMANYSSUS AVIUM.

This is one of the exceedingly rare parasites which occasionally infest the human being, and are very common if not universal in fowls. According to W. T. Gairdner (*Clinical Journal*, June 27, 1900) it was described in the new Seidenham Society Atlas of Skin Diseases, 1875, and is sometimes spoken of as *Dermanyssus gallinæ*. The parasite is found upon poultry, and when it once obtains lodgment upon the surface of the human being, it seems to be very difficult to get rid of. A case described by Gairdner first came to his knowledge in 1879, in a letter from a Scotch physician. The letter says: "Can you tell me of any consultant who could give special advice in a distressing case of a lady who, in visiting the poor, has become infected with lice? I never met with a genuine case of phthiriasis before. I have had her bathe over and over again, each time putting on clean clothes. Once the bath in this way was twenty minutes soaping and scrubbing; then twenty minutes sponging all over with solutio sulph. c. calce; then a third twenty minutes in the bath. Also lotion of carbolic acid to limited portions. All her clothes have been disinfected at a temperature of above 300°. Still the loathsome creatures reappear. The brutes are very small. I enclose one."

The specimen that was sent to Dr. Gairdner was carefully examined, and it was easy to determine that they were not pediculi of any of the three varieties common to man. An examination of the specimen showed its close resemblance to the *Dermanyssus avium*, and a diagnosis of this particular parasite was made and apparently confirmed by subsequent inquiry, which showed that the patient was a great fancier of poultry, and that she made herself very familiar with the fowls, nursing them in her lap.

This particular parasite is not even mentioned in most of the works dealing with the animal parasites, but that cases had been observed prior to the one coming under Dr. Gairdner's notice is apparent from the fact that it is mentioned in the Atlas of Skin Diseases as early as 1875.

HEPATIC NEURALGIA.

Neuralgia of the liver is not a new subject, as most writers who have considered visceral neuralgias refer to it, and as early as 1845 Alnatt, in the *London Medical Gazette*, wrote upon hepatalgia. The earlier writers found great difficulty in distinguishing between gallstone colic and neuralgia, and undoubtedly some of the earlier clin-

ical descriptions made no effort to distinguish between hepatic colic and hepatic neuralgia. Even the advanced methods of diagnosis that are at our command at the present time make the differentiation between the two conditions one of great difficulty. That there may be a true hepatic neuralgia, however, is recognized by most writers, and Krauss has reported typical cases of hepatic crises in the course of tabes. The diagnosis of hepatic neuralgia is acquiring increased importance because of the frequency with which surgical intervention is called for in the relief of impacted gall-stones. A number of writers, in reporting cases, speak of occasional instances in which a diagnosis of recurrent or impacted gall-stones has been made, but upon operation no stones were found, and there was no want of patency in the gall-ducts.

The symptoms of neuralgia of the liver resemble very closely recurrent attacks of gall-stone colic. There is the same sense of weight in the epigastrium with tenderness over the liver, and not infrequently some enlargement of the liver. Hepatalgia is, like gall-stones, most common in women. Icterus is common in cases of gall-stone, and it is usually absent in hepatalgia. It is well, however, to remember that slight jaundice may occur in the course of neuralgia of the liver, and it is this fact that makes the diagnosis between the two so very difficult. There is one diagnostic distinction that never fails, namely, the detection of gall-stones in the stools. This, of course, requires a great deal of patience and prolonged observation of the patient, and the definite recognition of these objects, even when found, is by no means easy.

THE RELATION OF TRAUMATISM TO TUBERCULAR PROCESSES IN BONES AND JOINTS.

The older writers believed that traumatism played an important rôle in chronic inflammations of the joints and bones. It is comparatively easy in children, and not infrequently possible in adults, to elicit a history of a fall or blow received in the neighborhood of a joint some weeks or months before there are manifestations of serious trouble in the part. That *post hoc* is not always *propter hoc* was long recognized, and additional emphasis was lent to this view by the frequency with which the tubercular bacillus was found in these cases. As a consequence, most writers, during the past eighteen years, scout the idea that traumatisms have an important relation to the development of hip-joint disease or Pott's disease, due essentially to a tubercular process.

It is possible that modern writers have gone too far in rejecting traumatism as a cause of these troubles. Logically, it must be admitted that traumatisms that do not break the skin or penetrate the interior of joints cannot implant the tubercle bacillus in these deep structures. It is possible, however, that joint injuries such as strains or blows may result in a chronic synovitis with an increase of fluid in the joint, and thus establish a favorable nidus for the development of the tubercle bacillus. Additional strength is lent to this view by the fact that it has been demonstrated that we all harbor tubercle bacilli to a greater or less extent, and the fact of the development of this particular infection is due to a lessened resistance on the part of the individual. There may be a good deal of truth in the theory that traumatisms are an important element in the development of local tuberculosis. The whole question needs to be carefully studied in the light of our more exact knowledge of pathology and the relation of the tubercle bacillus to chronic bone and joint disease.

THE VALUE OF THE CLINICAL THERMOMETER.

In this day no one will question the value of an accurate record of the temperature as an aid in diagnosis. We say "as an aid in diagnosis" advisedly, as current medical literature would lead one to think that sometimes the mere taking of the temperature is regarded as a diagnosis in itself. Even when it is not looked upon as pointing the diagnosis, it is not infrequently looked upon as a valuable guide in treatment. The prevalence of such a view would almost lead one to think that the clinical thermometer had been productive of not a little harm to patients. This is inevitable if it is relied upon as furnishing one of the prominent indications for treatment. A heightened temperature of the body is in its character and duration a marked aid in estimating the progress and probable duration of an infectious malady, but if we fall into the error of treating fever, regarding this as synonymous with an elevation of the bodily temperature, we miss the real value of the clinical thermometer in diagnosis. The clinical thermometer is especially hurtful if its readings guide only to the administration of antipyretics in the treatment of febrile states. These may be devoid of harm in cases in which an early resolution is to be looked for, and in which the condition of the heart and circulation does not contraindicate their use. As a rule, however, they are to be avoided, though no hard and fast line can be laid down. Indeed, it is the tendency of writers

to be dogmatic in the statement of rules. No one can practice medicine intelligently who is bound by any special rule in a particular case. This unavoidably leads to a routine practice and a failure to differentiate the underlying pathological conditions in the individual case. Such practice cannot but lead to the treatment of the disease rather than the patient.

THE BACTERIOLOGY OF SCARLET FEVER.

W. F. Doolittle, in a preliminary communication in the *Boston Medical and Surgical Journal* of June 14, 1900, has obtained from the bulk of scarlet fever patients a capsulated diplococcus in pure culture. This he regards as probably the same organism often described in connection with scarlet fever as the diplococcus pneumoniæ croupousæ, and he thinks it may be a variety of that germ. It was grown in hydrocele fluid, the media being obtained from a healthy child nine months old who had not been vaccinated nor suffered from any contagious disease. The hydrocele fluid was obtained with all aseptic precautions, and was found to remain sterile in the containers for several days when kept at body temperature. The blood was likewise obtained under strict asepsis, and similar cultures were attempted in ascitic fluid, bouillon, agar, and milk. There was no development excepting in the hydrocele fluid. The germ from this fluid could be reinoculated into agar, gelatin, or blood serum, and upon this a luxuriant growth appeared within twenty-four hours. The growths on the blood serum and agar appeared as frosty granular streaks limited to the path of the inoculating needle. Cover-slips prepared from this took the methylene blue stain irregularly. These observations of Dr. Doolittle bear a striking resemblance to those of Dr. W. J. Class, who seems to have demonstrated a diplococcus that from its description closely resembles that isolated by Doolittle. Class succeeded in cultivating the germ on nutrient media prepared in part from sterilized garden earth. The organism was of large size, and, like that of Doolittle, would not grow on the usual media.

THE PASSING OF HYPNOTISM.

It is now ten years since the work of Bernheim and Liebeault attracted such profound attention that the eyes of the medical world were turned to the school at Nancy, and many visited that city for the purpose of studying the methods of these workers. Full credit

should be given the school at Nancy for placing the subject of suggestive therapeutics upon a secure foundation. If no direct good has been accomplished, still the indirect effect upon our therapeutics of a knowledge of the enormous force of suggestion in governing the action of drugs has been of inestimable value.

Ten years after, with the correct appreciation of hypnotism and a full estimate of its value, we find that scarcely any leading clinicians in the various cities are using suggestion to any considerable extent. We know of no leading practitioner in the domain of neurology who uses suggestive therapeutics to the exclusion of other means, or, indeed, extensively, in the treatment of nervous affections. We believe that suggestion is a most valuable method of treating disease, and that the practitioner who makes a suggestion with the means which he employs in the treatment of disease, or with the drugs which he uses, will be far and away the most successful in overcoming diseased states. By suggestion, however, it is not necessary to employ hypnosis. We believe that in the majority of cases suggestion can be quite as well carried out, and in some instances much more efficiently, without the induction of hypnosis as with it. This is not to say that there may not be an occasional case in which hypnosis is of distinct advantage, if it can be induced.

ABSTRACTS.

MEDICINE.

An Autopsy in a Case of Adiposis Dolorosa.—

F. X. Dercum, in the *Journal of Nervous and Mental Diseases* for August, 1900, gives an account of an autopsy on a case which was first seen by him in 1888, and which gave the name to this symptom-complex. That the disease is a rare one is shown by the fact that since the original description only sixteen cases have been recorded.

A woman 51 years of age, a widow, a native of Ireland, and a domestic with a negative family and personal history, continued well until she was about 49 years of age. There had been some general increase of weight, but no peculiar symptoms. She first noticed that her arms began to enlarge and were the seat of shooting and burning pains, involving the shoulders, back, and sides of the chest. The condition was most marked in the upper arms and back, the masses here being huge and somewhat pendulous. They were firm to the touch and did not pit. The skin was not involved in the swelling; it was not adherent to the subjacent tissue. These swellings were very tender, and pronounced pressure was unbearable. The nerve trunks were somewhat painful, but this was not as marked as in the areas of the swollen tissue. The muscles were not involved in the swelling, but in the affected limbs were quite weak. The muscles of the shoulders and arms did not show electrical alteration, but slight qualitative and quantitative changes were noticeable; in the muscles of the hand a distinct reaction of degeneration was found. Cutaneous sensibility was diminished in irregular areas over the right arm; it was distinctly lessened in the right leg. Both knee-jerks were lost, but there was no alteration of the gait. No enlargement was noted in any part of the body save in the arms and shoulders. Nothing abnormal was noted in the eyes, excepting some contraction of the visual field; the examination of the urine and blood was negative. The patient was under more or less continuous observation at the hospital for a period of eleven years. The enlargements gradually increased, and finally included the abdomen, hips, thighs, and legs immediately below the knees. Paroxysms of pain were frequent and severe. Twice she had attacks of herpes zoster. Cardiac weakness became marked and finally caused death.

At the time of autopsy the body weighed about three hundred pounds. The deposit of fat was most marked over the arms, shoulders, and back, and was found to a less extent on the abdomen and thighs. Within the subcutaneous fat were found occasional independent lipomata; the internal organs were quite normal. On microscopical examination the fatty deposits were not distinguishable from ordinary fat. The superficial nerves found in the fatty areas presented well marked evidences of interstitial neuritis. There was marked diminution and atrophy of the nerve fibers, together with proliferation. The larger nerve trunks were not altered. The spinal cord presented some change in the upper thoracic and upper cervical regions. There was a slight degeneration in the columns of Goll. There were no changes in the lumbar cord. The brain presented no change except an unusual pigmentation of the cortical cells. The pituitary body presented nothing abnormal.

Very marked changes were found in the thyroid gland, which was smaller than usual. The changes were regarded by the author as a compensatory hypertrophy, associated with atrophy, such as Halsted obtained in the dog after partial extirpation. In connection with the significant findings in the thyroid, the author recalls the fact that the patient had diminished sweating, occasional slowness of speech, and mental irritability—conditions frequently found in that other thyroid disease, myxedema. In two previous autopsies in this disease in which there was no microscopical examination, the thyroids showed unmistakable signs of disease. One gland was noted as somewhat infiltrated with calcareous matter, was small, and indurated; the other was "larger than normal, harder to the feel, and much calcified, especially the right lobe."

Diagnosis of Cancer of the Stomach.—

Boardman Reed, in the *International Medical Magazine* for July, 1900, has an excellent *résumé* of this subject, one of increasing importance because of the frequency of gastric carcinoma.

There should be no difficulty in recognizing a typical cancer of the stomach when the tumor is palpable, especially when it is associated with the usual subjective signs of the disorder, and the vomiting, cachexia, and sometimes gastric hemorrhage. Unfortunately, a diagnosis that is made at this time is too late for surgical intervention. So far as possible the condition should be ascertained while there is yet time for an exploratory incision and the removal of the carcinoma by surgical means. The possibility of carcinomatous disease of the stomach should be considered in the case of every

patient who has recently developed dyspepsia that does not show improvement upon the administration of simple remedies and the regulation of the diet. In every such case the stomach contents should be examined, and if free hydrochloric acid is not found and lactic acid is, after a Boas test meal, there is a strong probability of the disease being carcinoma. More conclusive is the finding of nests of cancer cells; and he agrees with Hemmeter that we are justified in curetting in a cautious way for fragments of a suspected growth in the stomach. Pieces of mucosa in which the glandular ducts are elongated and the cells present karyokinetic figures are striking evidence of carcinoma, even when the typical cells are absent.

There is always anemia in cancer of the stomach, which increases as the disease advances, finally developing into a cachexia, but there are no blood changes which are characteristic of the condition. A low percentage of hemoglobin, an absence of digestive leucocytosis, while often valuable signs, are by no means present in all cases. A swelling of the lymphatic glands is found in from one-fourth to one-half of all cases, but it is less frequent in cancer of the stomach than that of the other organs.

The writer discusses the differential diagnosis of carcinoma from other conditions, and gives a translation of Boas's table for differentiating gastric cancer from other abdominal tumors by inflating the stomach and the colon.

Tumors of the	Upon Inflation of the Stomach,	Upon Filling the Colon with Water,
1. Stomach: (*a*) pylorus.	Move to the right and downward.	
(*b*) anterior wall and greater curvature.	Feel broader and less distinct at their margins.	All tumors of the stomach simply move upward.
(*c*) the lesser curvature.	Disappear entirely.	
2. Liver.	Move upward and to the right, so that the anterior border of the organ becomes more distinctly palpable.	Raise the lower border upward; a tumor of the gall-bladder is drawn forward. With very large tumors there may be no change of position.
3. Spleen.	Move toward the left; often also downward.	Move upward and to the left. Movable tumors may thus become recognizable in the normal splenic region.
4. Colon.		Do not move upward. At first they may ascend a little, but finally disappear. Movable kidneys return to the proper renal region. In large tumors of the kidneys the median border only becomes distinct.
5. Kidneys.	Move upward.	
6. Omentum.	Move downward.	Move downward.
7. Pancreas.	Disappear.	

The Statistics of Eighty-six Cases of Typhoid Fever.—

B. D. Gillies, in the *Montreal Medical Journal* for June, 1900, gives some interesting facts regarding cases of typhoid fever treated in the Royal Victoria Hospital in the year 1899. The mortality during the past year has been higher than at any other time since the hospital was opened, there being seven deaths, or 8.16 per cent. Death resulted in three cases from hemorrhage, in one case from hemorrhage and perforation, in one case from perforation, and in two cases from profound intoxication. On the average, the patients were admitted on the seventh day of the disease. The average age of the eighty-six cases was 23 years, nearly half of the entire number falling in the decade from 20 to 30. Over one-half of the cases were admitted during July, August, and September. The average duration of the fever was 24.6 days. The longest period was fifty-eight days, and the shortest eight days.

In 95.4 per cent of the cases the onset was gradual, the most frequent symptoms being general malaise, frontal or occipital headache, anorexia, pain in the back and lower extremities, and chilliness. In two cases pain in the back was severe, localized, and of sudden onset, simulating appendicitis. Chills occurred at the time of onset, or in the beginning of the disease, in 74 per cent of the cases. Diarrhea was present at the onset in 20.9 per cent, and persisted throughout the course of the disease in 8 per cent. Enemata were given in all cases of constipation. Epistaxis occurred at onset in 18.6 per cent. Vomiting marked the onset in 34 per cent of the cases. Delirium was present at the time of entry into hospital, or during the disease, in 18.6 per cent; in nearly every case it was of a low, muttering character.

An eruption was present in 72 per cent of the cases. In one case it was petechial in character, while in the remaining cases it was of the nature of rose spots. The earliest appearance of the rash was on the fourth day of the disease, and the latest on the fortieth. In one case it lasted three days, and the longest duration was twenty-seven days, the average being eleven days. In one case it occurred only during the relapse.

The spleen was palpable in 67.4 per cent of the cases. On the average, the spleen remained palpable for twelve days. In one case it was palpable for three days, while in another it was palpable for thirty-two days. A definite relapse occurred in eleven cases—that is, 12.7 per cent. The shortest duration of the relapse was eight days and the longest twenty-nine days, the average duration being eighteen days. In three cases the relapse was more severe than the

original attack. In one case temperature had been normal for seventeen days, when relapse set in, while in another the temperature was normal for only twenty-four hours. One case was readmitted to the hospital for typhoid fever, after having recovered from an attack four weeks previously.

The highest temperature recorded in any of the cases was 106.4°. In one case the maximum temperature was 100.4°. The average maximum temperature in all cases was 103.4°. The temperature read 104° or over in 48.8 per cent of the cases.

The Widal test was employed in all cases, and in only four was the reaction negative throughout the entire course of the disease. Three cases were regarded as abortive typhoid, the temperature remaining elevated in the longest case for only ten days, and no rose spots were present. The reaction occurred as early as the fourth day of the disease in one case, and in one it was not present until the eighteenth day. On the average, it was present on the eighth day. The reaction was tried in six cases at the date of discharge from the hospital, and in every one it was positive.

Sarcoma of the Stomach.—

George Dock, in the *Journal of the American Medical Association* of July 21, 1900, reports a case of this comparatively rare condition. Schlesinger, who made a careful study of the subject in 1897, was able to find only thirty-three cases recorded in the literature, to which he adds three of his own. The subject is brought down to date by Dock, who adds ten to those previously recorded. Sarcoma of the stomach may be primary or secondary; the latter is more frequent than the former. Several varieties of sarcoma may be present in the stomach and may have their origin in any part of the organ. The greater curvature is most frequently involved. The size of the tumors varies, but they are unusually large for gastric tumors. In two cases they have been found to weigh as much as twelve pounds. Examination of the stomach contents has been made in only a few cases, and in all but the case reported by Dock free hydrochloric acid was absent, and in most of them lactic acid was present. In most of Schlesinger's cases free hydrochloric acid was present in the beginning, but it disappeared. Occasionally blood was found in the stomach contents, and the general clinical resemblances were very close to those presented by carcinoma. The average duration of the disease is from one to one and one-half years, and the diagnosis is rarely made during life.

One case reported by Dock was that of a man 55 years of age, with a negative family history. His trouble began in December, 1897, with constipation and loss of weight. Soon after this there was a heaviness in the epigastric region and sharp attacks of pain in the right hypochondrium. Biliary calculi were suspected. Vomiting began in April, 1898. The following July a tumor was discovered just below the ribs on the right ride. At this time there was rapid loss of weight. Under tonics and careful regulation of the diet, the weight improved until October, 1899, when vomiting occurred after almost every meal, and there was rapid loss of weight, with distention of the stomach. Repeated examination of the stomach contents showed hydrochloric acid, but lactic acid never. There was an increase of indican in the urine. The blood examination was negative, the red corpuscles being large in quantity and the hemoglobin 75 per cent. February 5, 1900, about one-third of the long axis of the stomach, including the tumor, was removed. The operation was followed by a perfect recovery, the patient weighing 140 pounds on the 30th of June following, which was a greater weight than he had before the disease began.

Two Cases of Osteoarthritis of the Spine and Hip-joints.—

The recent literature of spondylosis contains a number of interesting cases, but none that are more striking, especially from the relation of injury to the development of the affection, than that reported by C. H. Frazier in the *University Medical Magazine* for July, 1900. The patient was a man 42 years old, whose family history was free from hereditary taint. He had never been robust, but up to the present had had no serious illness. Four years before coming under observation he was quite severely squeezed by some heavy iron, though there were no evidences of serious injury to the trunk or internal organs. After a month in bed he returned to his work, and for six months experienced no ill effects from the accident. From that time he began to complain of a sense of weakness in the lumbar region, and a stitch-like pain radiating from the right hip across the back to the left hip. These pains recurred with increasing frequency, until in the course of five or six months they became continuous, position having no influence over them. During this time the hip-joints and spinal column were gradually becoming stiff and rigid, and for the past three years the patient has been bedridden. There was complete ankylosis of the hip-joints and some stiffness in the knee-joints, although the latter could be flexed and extended without much difficulty. All the articulations of the

upper extremity, including those of the foot and ankle, presented normal movements. Pressure over the sacroiliac articulations and the hip-joints elicited some pain. The rigidity of the sacral, lumbar, and dorsal segments of the spine was complete, but the cervical was slightly movable. There was marked kyphosis of the upper dorsal and cervical vertebræ. The muscles were atrophied, but they responded well to the faradic current. The plantar reflex was sluggish, but the superficial reflexes with the knee-jerks were present. There was no evidence of disease of the spinal cord. The examination of the patient under general anesthesia did not show greater movements in the ankylosed joints.

Significance of Mold in the Stomach.—

Max Einhorn, in the *Medical Record* of June 16, 1900, says the presence of molds in the stomach is variously interpreted by authors. Most clinicians ascribe no significance to them. Talma was of the opinion that fermentation was caused by the presence of these organisms, and that they were frequently accompanied by increased acidity. The writer reports four cases, three of hyperchlorhydria and one of chronic glandular atrophy in which mycelia were present. He recognizes the difficulty of assigning to such organisms their proper rôle. They may be only accidentally present as a result of the pathogenic changes in the mucous membrane, and they may themselves act as causes of gastric inflammation. While isolated fungi may exist in the stomach for a short time without detriment, they do not often find the normal organ favorable soil for further development. Most of such fungi that are perceptible to the naked eye are probably never to be found in the normal stomach. Any considerable growth of mold will be possible only if a colony of the fungi is encircled by a fold of mucous membrane and becomes so firmly attached that the fungi are not carried along with the passage of chyme. Under these circumstances the fungus colony may grow undisturbed, and considerable areas of the gastric mucosa may be covered.

The writer has met with the mold formation in two groups of gastric affection—in cases of intense hyperchlorhydria, and in those with reduced gastric secretion. In these cases gastric lavage and spraying the mucous membrane with a solution of nitrate of silver resulted in a subjective improvement in the patients. It cannot be stated with certainty, however, that the mold produced the pathologic process in the stomach, for analogous cases in every respect are found without the presence of these fungi. It is easily conceivable,

however, that the presence of the fungus may have increased the severity of the symptoms. Mold, if present in the stomach, should be removed. This is best done by irrigation when the stomach is empty. Following irrigation, nitrate of silver should be sprayed over the gastric mucous membrane.

Acute Enlargement of the Thyroid Gland.—

A. Stengel, in the *University Medical Magazine* for June, 1900, reports two cases of this kind. Fluctuation in the size of the normal and diseased thyroid gland is dependent upon its anatomical structure. The gland is elastic, containing much less connective tissue, and is very vascular. Such conditions make the gland favor, under normal conditions, rapid variations in size. Fear and sudden emotional disturbances have caused sudden swelling of the gland. Exophthalmic goitre may be simulated in cases in which fear and other emotional disturbances may be important factors. Acute enlargement of an inflammatory nature may be met with under a variety of circumstances, and is not infrequent in various infectious diseases. A toxic enlargement of the thyroid gland has been noted and has been studied experimentally. Pilocarpine has been found to produce an increase in the size of the gland. Thyroid enlargement may occur in the course of certain anemias, especially chlorosis. These enlargements are usually slow, but there are frequently rapid fluctuations. The clinical interest in these cases is due to the fact that the associated symptoms, palpitations, nervous tremblings, venous, arterial, and cardiac murmurs, prominence of the eyes, and relaxation of the skin, make a differential diagnosis from Graves's disease very difficult. A case reported by the writer is that of a boy 17 years old. He was admitted to the hospital for a swelling of the neck which came on three weeks before. There was marked enlargement of the thyroid, but no peculiarities about the eyes. There was a slight tremor, with a pulse-rate of 100. There was slight cardiac enlargement with a weak and diffuse impulse. A systolic murmur was heard over the base and not transmitted. Under treatment there was a rapid amelioration of the symptoms.

The Serum Diagnosis of Tuberculosis.—

D. L. Edsall, in the *American Journal of the Medical Sciences* for July, 1900, gives a critical summary of the literature on this subject. He points out that a serum reaction in tuberculosis would be very valuable from a clinical standpoint, but its successful application is difficult owing to the fact that the tubercle bacilli in ordinary

cultures are not homogeneously distributed through the culture medium and are not motile. Hence cessation of motility and clumping of the bacilli cannot be demonstrated. Notwithstanding these difficulties, cultures have been prepared which have been used with success in the serum diagnosis of a tuberculous patient. The great difficulty has been in preparing a suitable culture, and months of patient effort are required for this purpose. In carrying out the test a rich culture eight to twelve days old should be employed, and the technique is more difficult than in carrying out the reaction in typhoid fever serum. The work of Arloing and Courmont shows that 100 per cent give positive reactions in cases known to be tuberculous. In cases considered to be other than tuberculous, they had twenty-six positive reactions out of sixty. Nine of the twenty-six showed at autopsy the presence of the tubercle bacillus, which had not been suspected in the clinical examination. Twenty apparently healthy persons were examined, and six gave a reaction, but there was no opportunity to determine whether these six subsequently developed tuberculosis or not. These results compare fairly well with the tubercular test. The writer points out the enormous value of this method if it could be brought into general use, but it requires a great deal of care and patience, and disheartening failures are likely to be met with in accustoming oneself to the work and in the preparation of proper cultures.

Recurrent Trance.—

C. I. Page, in the *Medical Record* of August 11, 1900, reports the case of a widow aged 91 years, the mother of three children. In October, 1875, she received a severe blow upon the head. A severe scalp wound was found over the occipital protuberance, but there were no signs of fracture. At the time she had no symptoms of concussion of the brain. At the end of two weeks she was apparently well and able to resume her household duties. About two months after the accident she complained of having a headache and feeling sleepy. It was in the evening, and she retired. After being shaken she awoke for a few seconds, answered questions, but directly was sleepy again. Her appearance at this time was similar to one who was under an anesthetic or morphine. She would not ask for food or water, but if they were placed to her lips she would eat and drink; if not continually urged, she would stop. There was no emptying of the bowels or bladder, unless kept awake and requested to do so. The superficial reflexes were diminished, eyes closed, and pupils dilated. There was no muscular rigidity. This trance con-

tinued for five days; she then awoke, and for a few hours there was a mild delirium. After this she seemed perfectly rational, but could not remember persons she had seen or conversations which had taken place during the trance. She remained awake continually for four days, and would sit all night reading, sewing, or in conversation with her attendant. At the end of this time she slept. In this manner she lived for twenty-five years, sleeping five days and awake four. This condition recurred with clock-like regularity. The woman's mental powers, while she was awake, were much better than those of the average person of 75 years of age.

The Blood Reaction in Diabetes Mellitus.—

R. T. Williamson (*Lancet*, Aug. 4, 1900) has examined forty-three cases of diabetes mellitus, and has always found that the blood of the diabetic has a power of decolorizing a dilute alkaline solution of methylene blue. In addition, he has tested the blood of one hundred patients suffering from other diseases of every form, and the blood of healthy persons, and never obtained this reaction. He has experimented upon the blood of diabetics post mortem, and finds that this reducing substance is present in the serum. If the serum is subjected to the action of yeast, the reducing substance is no longer present. After the proteids of diabetic blood or serum have been separated by boiling with sulphate of soda, and filtered, the filtrate gives the reaction. Normal blood does have some reducing power on the color of methylene blue, but where measured quantities of the blood and reagent are employed, a definite result is always obtained in diabetes. Apparently it is the sugar in the diabetic blood that gives the reaction, as it disappears after yeast is employed. It is also obtained with diabetic urine, the latter losing its power also when subjected to the reaction of yeast. If glucose is added to normal blood, the reaction is obtained. This reaction of diabetic blood is exceedingly delicate, and may be obtained even when the urine contains only a small quantity of sugar. The writer is of the opinion that the method has some forensic value in cases of sudden death from diabetic coma. In these cases the pathologist may have difficulty in determining the cause of death if no urine can be obtained for examination.

Tuberculosis of the Skin, Due to Inoculation with the Bovine Bacillus.—

The relation of bovine to human tuberculosis is a burning question and one that is by no means settled. Many leading pathologists believe that the bovine bacillus is quite innocuous in man.

Three cases of the direct infection are reported by M. P. Ravenel in the *Philadelphia Medical Journal* of July 21, 1900. A veterinarian in Pennsylvania, while making a post-mortem examination of a tuberculous cow, accidentally wounded his finger. The wound healed slowly, and a nodule soon formed which showed a tendency to ulcerate. The nodule was removed and placed in alcohol for about ten days. This, the writer thinks, interfered with the demonstration of the bacilli, which were never satisfactorily shown, but the histological structure of the excised mass he thinks establishes the tubercular character of the lesion almost beyond a doubt.

A second case was that of Dr. Ravenel's assistant, who scratched his knuckle on the broken end of a bone while making a post-mortem examination of the bones of a goat which had succumbed to experimental inoculation with the bovine tubercle bacillus. The wound was treated antiseptically and healed promptly. Three weeks later it became reddened, swollen, and sensitive, and about two months after the inoculation the nodule was excised. A portion of the nodule was inoculated into guinea-pigs, which died of generalized tuberculosis, involving the chest cavity.

A third case was that of a veterinarian who wounded the knuckle of the third finger in making an autopsy on a tuberculous cow. Four weeks later the nodule was enlarged, red, and sensitive, and six weeks after it was first noticed it was excised. The tubercle bacilli were demonstrated in the sections.

A Peculiar Corpuscle in the Blood of Syphilitic Persons.—

According to a correspondent of *The Lancet* of June 16, 1900, Dr. Lostorfer, of Vienna, has described a peculiar corpuscle in the blood of syphilitic persons. These appear shortly after the primary sore, but before the appearance of the secondary eruption. The corpuscles are small and round, of the size of the blood granules, and have a peculiar luster. After some hours they congregate in groups of from two to twenty, forming oblong bodies. After three days they begin to disappear, especially when the mercurial treatment has been commenced, and after twenty or twenty-five inunctions they can no longer be found. It is said that these corpuscles are not to be found in the blood of healthy persons, or in those suffering from other diseases than syphilis. These claims have been confirmed by Professor Paltauf. It is said that these corpuscles are not stained with the ordinary staining solutions, but become more distinct on the addition of acetic acid.

SURGERY.

A Study of Twenty-four Cases of Peritoneal Infection in Typhoid Fever.—

On April 16 G. B. Shattuck, J. C. Warren, and Farrar Cobb made a report to the Boston Society for Medical Improvement on cases of laparotomy made for peritoneal infection during the course of typhoid fever (*Boston Medical and Surgical Journal*, June 28, 1900). The whole number of cases studied by the committee was twenty-seven, included in the years between 1895 and 1900. Of these, three were rejected because of the lack of proof that they were cases of genuine typhoid fever. All of the twenty-four cases had symptoms upon which a diagnosis of intestinal perforation was made, and for which an operation was performed. The part of the report of the committee which is of especial interest is that dealing with the diagnosis of this rapidly fatal complication. It is stated that the diagnosis in fourteen cases was apparently made later than it might have been, and in seven cases only was it made as soon as possible, and in three cases there was a mistake in diagnosis. In the majority of cases of intestinal perforation there is a slow intestinal infection of gradual onset, and in some a perforation may take place without fulminating symptoms. The authors find that the formation of protecting adhesions in perforation or threatened perforation of the ileum is exceedingly rare. Intestinal ulcers may have a stage in which the local peritoneal infection gradually extends without the formation of adhesions and without perforation. Pain was absent in seven of the twenty-one cases. Of six cases, five were mild types of the disease, but were followed by sudden rupture and extravasation. In two cases with equally sudden symptoms, a septic peritonitis was already under way. Fourteen cases had early warning pain which preceded by a definite number of hours the severe symptoms, and all of these cases were found to be far advanced in general peritonitis at the time of beginning operation. These early symptoms undoubtedly meant peritoneal infection.

From the study of these cases the authors draw conclusions that abdominal pain in any typhoid case, especially if localized, even if the disease is of a mild type, should be regarded as a serious danger-signal. The pain is most frequent in the right iliac region, and is frequently associated with localized tenderness and muscular spasm. The suspicion of beginning peritoneal infection is confirmed by a rising leucocyte count; examinations should be made at hourly intervals. Vomiting is rare, and an increase in pain is generally

accompanied by a rise in temperature and quickened pulse-rate. Localized abdominal pain is rarely complained of in typhoid fever, excepting in cases where the peritoneum is involved. This is true in cases in which there is distention, diarrhea, and hemorrhage. Localized muscular spasm and localized tenderness are signs of the utmost importance, if they are associated with pain and leucocytosis.

The authors say that the relation of leucocytosis to typhoid peritonitis has not been definitely determined, but sufficient is known to show the value of an increased leucocytosis in pointing to the presence of inflammatory complication. The leucocytes are normal, or below normal, during typhoid fever, but the advent of any inflammatory complication increases the number. An individual count may be misleading, as there may have existed prior to the time when it was made a condition of hypoleucocytosis, and thus a count which only gives the normal limits of from eight to ten thousand may represent a very marked increase in the number of leucocytes. Such an increase is transient and may escape observation, unless the counts are made at comparatively frequent intervals. In a case reported by Cushing an hourly blood-count showed that the white corpuscles rose in two hours from 4800 to 10,400, and an hour and a half later had dropped to 7000.

From a study of their comparatively few cases, and in some of which the data is imperfect, the authors are of the opinion that in many cases where the patients are very low with typhoid fever, peritoneal infection cannot be diagnosed until the results are of fatal extent, and operation in such cases is certain to terminate unfavorably. In mild typhoids of fair general condition, an abdominal operation is readily borne, provided no peritoneal infection is present. A small number of mild typhoids may have sudden perforation with free extravasation. In these the symptoms are fulminant, but localized to a great extent, and operation must be resorted to at once, for general infection may be beyond relief in from one to five hours. The walling off of the perforation by protective adhesions is so rare that it cannot be counted upon. In the majority of mild cases, beginning infection, whether from perforation or not, is marked by comparatively slight symptoms, local pain, tenderness, spasm, and leucocytosis. The severe following symptoms mean general peritonitis. These warning symptoms demand serious consideration, and in many cases they are either not rightly understood or not acted upon. Complaint of abdominal pain in a case of typhoid should always lead to a suspicion of beginning peritoneal infection. Frequent leucocyte counts are needed in every

case of typhoid. In the presence of abdominal pain, an hourly count is necessary. Pain associated with local tenderness and muscular spasm, and a rise in the number of the white blood-corpuscles, point in most cases to an operation—in all cases to a surgical consultation.

Tendon Transplantation in the Treatment of Deformities of the Hands.—W. R. Townsend, in the *Medical News* of July 14, 1900, says that tendon transplantation in the treatment of deformities of the feet has been often resorted to and has received extended notice in the literature, but that comparatively little attention has been paid to this subject in the treatment of the deformities and loss of motion in the fingers and hands. Too often patients are dismissed with the statement that nothing can be done for them in case they are suffering from drop-wrist or other marked deformities of the hands. Every one of these cases should be carefully examined and each muscle should be tested, both with the faradic and galvanic currents, to learn if there is any reaction of degeneration. A careful analysis of these cases will show what tendons to transplant, as it is obvious if there is to be a restoration of function the tendons of paralyzed muscles must be attached to those which are not paralyzed. In rare instances the tendon of a paralyzed muscle might be transplanted, simply with the hope of placing the hand in a better position, without expectation of a restoration of motion.

The writer has used silk, catgut, kangaroo tendon, and silkworm-gut in suturing tendons, and has had no difficulty in obtaining union. Most operators have employed silk. He does not advise that catgut should be used, as it is absorbed too rapidly. He advises that the tendons be not cut across entirely in shortening them, but that they be lapped, so that in cases of non-union there shall not be the wide separation between the divided ends. In suturing tendons the method of Goldthwait is employed. The tendon to which the attachment is to be made is split, and the end of the severed tendon to be transplanted is first roughened and then slipped through the opening. In this way both sides of the severed tendons become attached, and the sutures are so placed that when they are tightened the outer tendon is spread out. In one of the writer's cases the tendon of the transplanted muscle was passed successively through two openings in the distal tendon, thus making two points of attachment.

In the after-treatment the hand should be held in a hyperextended position for at least six weeks, so as to admit of perfect tendon union. At the end of this time motion is regained gradu-

ally, and electricity and massage are employed, the ultimate result being largely dependent upon care in the after-treatment.

The writer says that the operations so far performed have consisted mainly in dividing tendons that were contracted and fastening them to those that were too long, or paralyzed. The practice in the future will be to lengthen tendons which are contracted, in case some muscular power is retained. In many cases these contractures are active, and yet the muscles on both the dorsal and palmar surfaces of the wrist will act to faradism, but the hand is so flexed that the power of the extensors is *nil*. In such a case, if the flexors of the wrist are divided, the power of flexion is done away with. In such cases at least one or more of the flexors should be preserved.

Appendicular Fistula.—

J. B. Deaver, in the *Journal of the American Medical Association* of July 14, 1900, says that this form of fistula is common after operations for acute appendicitis. Delay in operation is a common cause of fistula. There are two types, the external and internal, the former being divided into the simple and fecal. The simple form of fistula is an external channel leading to an unhealed abscess, and corresponds to the drainage tract. This tends to heal spontaneously, and it is often due to some foreign body in the tract. A second variety of the simple fistula is where the lumen of the appendix is in direct communication with the tract. In these cases clear mucus is discharged, and the absence of fecal matter is due to the fact that the inflammatory process has separated the cæcum from the appendix.

Fistulæ which discharge feces may be due to communications with the appendix alone, or there may be a connection of the colon and the large or small intestine with the tract, in which case it amounts to an artificial anus.

Fistulæ persist because of the continued use of the drainage-tube. Fistulæ may not always make their appearance early—that is, within a few days after operation; a week or ten days may elapse, and it is possible for the complication to appear at an even more remote period.

The internal variety of fistula occurs as the result of the evacuations of an abscess into the hollow viscera. The author objects to the view that this is in any sense a favorable termination of these cases. These fistulæ may communicate with the bladder, upper air-passages, or with the ureter. The most favorable variety of internal fistula is where the abscess breaks into the cæcum or the ascending colon.

The treatment of these fistulæ varies with the individual case.

Many of them will heal spontaneously under regulation of the diet and cleanliness. Operative treatment should consist in exploring the tract, curetting, and packing. Where it is possible without opening the peritoneal cavity, the mouth of the fistula should be enlarged to a degree eqnaling the transverse diameter of the abscess cavity in its widest part. In operating for fecal fistula, the abdomen should be opened, the appendix removed, and all the peritoneal adhesions broken up. When the fistula is in communication with one or more openings in the intestines, closure preferably by sutnre is to be recommended, but resection is sometimes necessary.

Surgery Among the Insane.—

A. T. Hobbs, in the *Canadian Journal of Medicine and Surgery* for July, 1900, gives an account of the surgical work performed at the London Asylnm for the Insane. In the surgery of this class numerous difficulties are met with, which are not found ontside of institutions for the insane. Among these are difficulties of diagnosis. Very little reliance can be placed upon subjective symptoms. In many pain is not indicated as it would be in the sane. The sufferings induced by physical ailments in the insane may be designated by them as electric currents working on their bodies, mesmerism, or poisons. In others serious disease may be present, but the patient's mental conception is so dull that no complaint is made. The description of their troubles is often misleading, and actual examination is the only reliable method of determining physical derangements. A thorough physical examination is often difficult or even impossible, because the patient resists, and it is sometimes necessary to resort to the use of anesthetics. The writer is of the opinion that chloroform is an especially dangerous anesthetic among the insane. Ether has given satisfaction, especially since using nitrous oxide in the preliminary narcosis. The preparation of the patient for operation, as well as the after-treatment, is often very difficult. To offset these difficulties, there is the advantage that there is little or no shock succeeding often prolonged operations, and postoperative pain is rarely complained of. In the majority of cases convalescence is rapid. Of 211 women patients, 179 were found to present well marked signs of pelvic disease. Of these, 116 were operated upon, with two deaths. These are divided into two classes, 98 belonging to tubal and ovarian disease of an inflammatory character, including inflammatory peritonitis. Of these, 51 per cent were followed by restoration to mental health, and in 17 per cent there was marked improvement. In the non-inflammatory group, including displace-

ments, tears of the peritoneum, and tumors, the recovery was 25.5 per cent, with 31 per cent improvement. These cases number 70. The best results followed the removal of diseases that were the result of previous inflammatory reaction. Fifty-one of the 112 patients who recovered had been insane for two years. This speaks volumes for gynecological surgery among the insane.

The Relief of Intracranial Pressure.—

W. N. Bullard, in the *Journal of the American Medical Association* of June 30, 1900, says the operation of trephining in non-traumatic cases in which there is intracranial pressure often affords relief of pain and other distressing symptoms. This operation is advisable in cases in which the diagnosis is uncertain, and in which there are no localizing symptoms. In most cases of intracranial tumor, where the opening is not undertaken with the hope or expectation of removal, it is well understood that relief is but temporary. The operation, however, is to be done in cases where there is increased cranial pressure from whatever cause. This may occur without the suspicion of a new growth, and the relief of the pressure symptoms may be followed by a practical recovery of the patient. He describes the case of a patient who had symptoms of cerebral disturbance, but no focal signs. An opening was made in the skull, and after incision of the dura mater the brain protruded about an inch. This portion was removed, and the patient made an uninterrupted recovery, with a decrease of all symptoms of intracranial pressure.

From this and another case the author concludes that there exist certain non-traumatic cases of increased intracranial pressure of unknown or doubtful origin. Whenever such an excess of intracranial pressure exists, the question of its relief by opening the cranium and cutting the dura should always be considered. In certain non-traumatic cases more or less permanent relief or even cure may be obtained by proper interference. In cases of acute optic neuritis of unknown origin, the question of opening the cranium and relieving the excessive intracranial pressure should be considered.

Formaldehyde as a General Surgical Antiseptic.—

G. E. Crawford, in the *New York Medical Journal* of June 30, 1900, says that this substance comes nearer meeting all the requirements of a perfect disinfectant than any yet employed. Its germicidal power ranks with that of two or three of the most efficient bactericides, and its inhibitory power is probably more lasting than

that of any of them. It is not only an antiseptic, but a deodorizer, and solutions of efficient strength are much less irritating both to hands and to wounds than any other equally efficient antiseptic. The mistake generally made is the employment of a too strong solution. In this way the surface of the wound is hardened and the healing process retarded. This is entirely unnecessary, as a solution strong enough to completely inhibit the development of pus germs may be used to cleanse and wash out and pack pus cavities and sinuses without interfering in the slightest degree with healthy granulations.

Confusion has crept into the literature on the subject, from the fact that sometimes formalin and formaldehyde are spoken of synonymously. Formalin is a 40-per-cent solution of formaldehyde; the latter is the active substance. For purposes of general surgery, the author has found the 4-per-cent solution of formalin to be most satisfactory. This is made by adding five ounces of formalin to seven pints of sterilized water. From this stronger solution the working solutions are prepared according to the following table:

½	oz.	4%	solution	to	15½	oz.	water	⅛%	formalin	$\frac{1}{2000}$ formaldehyde.
1	"	"	"		15	"	"	¼%	"	$\frac{1}{1000}$ "
1½	"	"	"		14½	"	"	⅜%	"	$\frac{1}{666}$ "
2	"	"	"		14	"	"	½%	"	$\frac{1}{500}$ "
2½	"	"	"		13½	"	"	⅝%	"	$\frac{1}{400}$ "
4	"	"	"		12	"	"	1 %	"	$\frac{1}{250}$ "

The conditions in which the author thinks formalin is distinctly superior to any other antiseptic are in the packing and drainage of pus cavities and sinuses. There is not a condition in which iodoform is used but that formalin will answer a better purpose. In obstetric practice formalin meets all the requirements of an antiseptic to disinfect the hands and the surgical parts, and as a vaginal douche when one is needed.

Splenectomy for Congestive Hypertrophy.—

J. W. Bovee, in the *Georgia Journal of Medicine and Surgery* for August, 1900, calls attention to two previously reported cases of splenectomy. One of these operations was done in a case of leucocythemia in which the spleen weighed twelve pounds and seven ounces. The patient had a valvular lesion of the heart, and death occurred as the tumor was being taken from the abdominal cavity. The writer attributed death to the sudden removal of pressure which the enlarged spleen had exerted upon the under surface of the diaphragm.

A second case was that in which an enlarged movable spleen was associated with tubercular peritonitis. In this case the organ weighed twenty-eight ounces and was successfully removed, the patient being alive several months later.

Another case was that of a patient who was in hospital for three months before operation. Ample opportunity was afforded of making frequent blood-counts, and a complete record of the pulse and temperature both before and after the operation. The removal of the spleen was followed by a very marked improvement of the patient, and the case illustrates how the removal of the spleen may often be followed by little or no disturbance in the general condition of the patient. The writer is of the opinion that in every case in which it is proposed to perform this operation, the blood condition should be carefully observed for a considerable time beforehand. This, he thinks, furnishes definite indications for or against the operation.

The principal reasons which dictate the removal of the spleen are its enlargement from chronic malarial intoxication, tuberculosis, misplacement of the organ, cystitis, chronic congestion, amyloid disease, injuries, and rupture. The most frequent cause of enlargement of the organ, leucocythemia, is the one condition in which the operation should almost never be performed. More than one hundred cases of splenectomy have been performed in this condition, and only three of them have been successful. A blood-count of red cells of 2,500,000, and white cells increased above 9000, and a hemoglobin percentage below 70, he thinks absolutely interdict operation.

Aspiration in the Treatment of Acute Traumatic Empyema.—

J. D. Bryant, in the *Medical News* of July 28, 1900, describes the case of a man 24 years of age whose right chest was penetrated at the level of the fourth rib by a shaft of a vehicle. The fourth rib was broken into two fragments, but there was no apparent injury of the lung. The external wound was opened, the pleural cavity carefully cleaned, and the ribs restored to their normal position; but it was realized that there was probable infection which might lead to suppuration. The thoracic fluid was examined on the third day and found sterile, but on the fifth day microorganisms and pus corpuscles were found to be present, and soon a free suppurative process was fully established throughout the entire field. The entire pleural cavity was soon involved, and the lung collapsed with the formation of adhesions. An effort was made to overcome

this by withdrawing the air from the pleural cavity by continuous suction. After numerous trials an apparatus was finally fitted with a rubber drainage-tube passing through a cap which accurately fitted the chest wall. This was used in aspirating the fluid from the chest and in washing out the cavity, after which, by means of a stop-cock, the pleural vacuum which was obtained in the chest was maintained by attaching a partly collapsed rubber bulb to the drainage-tube, by which a negative pressure was constantly maintained. With this simple apparatus there was a rapid reduction in the size of the cavity, and an expansion of the collapsed lung.

A Simple Method of Sterilizing Sponges by Boiling.—

C. A. Elsberg, in the *Medical Record* of June 30, 1900, says that heretofore sponges could not be thoroughly disinfected, because when boiled in plain water, soda solution, or antiseptics, they lost their elasticity and power of absorption. He has devised a method by which they may be perfectly sterilized, and at the same time retain all of their physical qualities, size, softness, elasticity, and power of absorption. In this method sponges are first freed from calcareous matter by immersion for forty-eight hours in muriatic acid solution. After this they are thoroughly washed in water, and are then boiled in the following solution for fifteen minutes:

Potassium hydrate	1 part.
Tannic acid	3 parts.
Water	100 parts.

After this they are washed in water, carbolic acid water, or sublimate solution until all of the potassium hydrate and tannic acid mixture is removed. The sponges are then preserved in five-per-cent carbolic acid solution.

Evidences of Prostatic Atrophy After Castration.—

E. L. Keyes, Jr., in the *Medical Record* of July 21, 1900, says that the apparently strong points in castration for prostatic hypertrophy cannot long hide its inherent weakness. Nowhere in surgery are pathology and practice apparently drawing wider apart. The author says the experiments, whether on man or the lower animals, relating to the normal prostate do not of necessity apply to the enlarged prostate. There is no direct pathological evidence that castration has ever caused atrophy of a hypertrophied prostate. There is direct evidence that in a few cases the operation has failed

to cause atrophy. The majority of cases reported thus far have been labeled cured or improved so soon after operation that no time is given to estimate the effect of local depletion. Clinical evidence of this is afforded by relapses which occur months after the operation. Permanent cures are probably due to the advantages derived from reduced congestion. The clinical evidence as to actual atrophy of the prostate after castration lacks scientific confirmation.

Secondary Cataract.—

W. H. Bates, in the *New York Medical Journal* of July 7, 1900, gives the result of an experimental study in rabbits, in which he claims to have demonstrated that secondary cataract in this animal is composed of new connective tissue together with the folded posterior capsule of the lens. The opacity of the structure occupying the pupilary area is due to the new connective tissue and not to the capsule. The formation of secondary cataract begins with the accumulation in the anterior chamber of a coagulable fluid at the time of operation. Fibrin appears in the pupilary area, and later new connective tissue replaces the fibrin. The formation of secondary cataract in the rabbit may be prevented by doing a quick operation, closing the scleral and corneal wound with sutures, and cleansing the chamber with salt solution. The result of his experimental work raises a strong presumption that secondary cataract in man is due to a formation of new connective tissue in the pupilary area.

THERAPEUTICS.

Treatment of Tetanus.—

Alexander Lambert, in the *Medical News* of July 7, 1900, says that the recent observations of Thallmann show that "rheumatic tetanus" and "idiopathic tetanus" are really forms of direct infection by the tetanus bacillus, in which the germ gains entrance to the system through the mouth and nose.

In the treatment it is to be remembered that there is a local septic wound and a general specific toxemia which has already attacked the cells of the central nervous system. The wound may be so slight that it has healed, or there may be no visible point of infection, and we have then to consider only the involvement of the brain and cord. In the regions in which tetanus is common, no wound is too insignificant but that it should be carefully cleansed and kept clean until healed. A septic wound of a suspicious nature

should call for the use of antiseptics which destroy the germs and also the toxins which are being absorbed from the wound. Bichloride of mercury and five-per-cent carbolic acid require several hours to kill the spores of the tetanus bacillus. If a mixture of 1-to-1000 bichloride, a five-per-cent carbolic acid, and a one-per-cent hydrochloric acid, is used it will kill spores of tetanus in ten minutes. A mere washing with a bichloride solution and drainage, even in wounds that are opened and cleansed, is not sufficient, but the toxin-destroying solution should be introduced into the wound hypodermically. The best physiological general antidote for tetanus is chloral. Amyl nitrite should be kept constantly at the bedside to prevent the respiratory spasm which sometimes occurs in this disease. In estimating the value of carbolic acid hypodermically, the writer speaks of the toxic action of the drug and the dangers to be feared from its use. In estimating the value of the antitoxin treatment of tetanus, the author says that its best results have been reached in the less acute cases, and it is of especial value in preventing the development of the disease. Cases which have received a wound which is suspicious should be given an immunizing dose of the antitoxin. Acute tetanus is really the end of an infection which has run through most of its stages. In subacute or chronic cases, the chances are decidedly in favor of recovery if antitoxin is used. If it is not used, the chances for and against recovery are about even. The writer has collected the record of fifty-two cases of tetanus, in which intracerebral antitetanic serum was used. The record of mortality in these cases is not favorable to this method of treatment.

Guaiacol in Pulmonary Gangrene.—

S. Diamantberger, in the *Journal de Médecine* of June 3, 1900, reports the case of a girl 14 years of age who was admitted to the Hôpital de Rothschild in an alarming state of prostration, and who ultimately developed pulmonary gangrene. On admission the temperature was 105°, thirst was extreme, the pulse frequent and irregular, and there was frequent and incoercible vomiting. The respiration was dyspneic. There was fetid and very abundant expectoration, which separated into three layers, the upper presenting a light gray more or less mixed with air; the middle layer was clear and serous; the lower was composed of muco-pus with more or less solid matter. Subcrepitant and coarse râles were heard over the left apex.

The method of treatment followed was that recommended by Dr. Weil, who has reported seven cases of pulmonary gangrene with

recovery treated by what he terms *injectiones guaiacoles intensives*. The patient was given daily a Pravaz syringeful of a solution prepared as follows:

Crystallized gualacol	10 grammes.
Oil of sweet almonds	10 grammes.
Hydrochlorate of cocaine	0.20 centigrammes.

Each evening there was given a small glass of milk, to which twenty drops of the same solution had been added. Each morning, alternating on the posterior and anterior surface of the chest, was applied a bandage ten by twelve centimeters saturated with the same solution. This was covered with gauze and oiled silk, all being held in place by a light bandage. At the end of twenty-four hours the vomiting had ceased, and at the end of four days the fever. The characteristic and fetid sputum diminished to about one-fifth at the end of six days. There was a marked improvement in the focal signs. The treatment was continued for about three weeks without appreciable reaction to the drug, and from that on the quantity administered was lessened. At the end of two months, when the treatment was finally suspended, the patient was practically well, had improved in flesh and strength, there was no expectoration, and no physical signs of intrapulmonary disease.

The Poisonous Properties of Potassium Chlorate.—

S. J. Meltzer, in the *Therapeutic Gazette* of July 15, 1900, has an experimental contribution on the toxicology of potassium chlorate. The poisonous effects of potassium chlorate have been the subject of special study since 1879, when Marchand arrived at the conclusion that potassium chlorate is a blood poison. The views of this contributor were later controverted by Stokvis, who claimed that methemoglobin found in the blood of animals poisoned by potassium chlorate was simply a post-mortem product. He claimed that the poisonous effects of this substance were due to its action upon the kidneys and upon the intestinal canal. Later investigations have definitely settled that both claims are correct, namely, that it does have an action upon the blood and is very irritating to the kidneys and intestinal tube. The writer has determined that potassium chlorate is a convulsant. The introduction of this substance in the peritoneal cavity in rabbits causes death of the animals in from forty to eighty minutes. The intracerebral injection causes general convulsions with rotatory and circus movements, which later give way to incoordinate alternating clonic contractions, interrupted by periods of perfect relaxation of the whole body. In the

intervals the animals are perfectly relaxed, respiration is very shallow, and sometimes such a quiet interval is succeeded by a violent attack of tetanus which may terminate fatally. When stronger solutions are employed, the tetanic state comes on immediately and the animal succumbs directly. When a few drops of a one-per-cent solution is injected, the animal runs about incessantly for perhaps an hour or more, and then sinks exhausted into a paretic state which lasts for a few hours. The following day the animal appears quite well.

These experiments show that potassium chlorate is not only a disorganizer of the blood and intensely irritating to the gastrointestinal tract, but it is also markedly toxic for the nerve cells, at first producing a stage of excitement and then paralyzing them.

A Mydriatic to Facilitate Examination of the Fundus.—

Sidney Stephenson, in the *Therapist* of June 13, 1900, says that it is difficult to explore the fundus of the eye fully with the ophthalmoscope unless the eye has been previously enlarged by a mydriatic. For this purpose atropine and homatropine have their drawbacks. Atropine paralyzes the smaller muscle, so that for several days the use of the eyes for near vision is practically impossible. Homatropine has somewhat similar effects, but it is of shorter duration than atropine. In using the ophthalmoscope for diagnostic purposes, a desirable mydriatic would be one which would dilate the pupil and at the same time not affect the accommodation. Modern pharmacy has provided us with two fairly trustworthy agents of this kind, namely, mydrin and euphthalmin.

Mydrin, prepared by Merck, is composed of ephedrin and homatropine. The product is a white powder, fairly soluble in water. A ten-per-cent solution dropped into the eye causes neither pain nor irritation, and dilates the pupil moderately within a few minutes with very little effect upon the accommodation. The pupil, even when fully under the influence of mydrin, still retains the light reaction. The effects of the drug pass off in the course of from four to five hours. The average time occupied by the pupil in dilating under the influence of this substance was twenty-nine minutes, the pupil regaining its normal dimensions at the end of about three hours. In young people the accommodation is never affected, but in older persons there may be a transient impairment. Solutions of this substance keep indefinitely.

Euphthalmin is a white crystalline powder soluble in water, and is employed in a strength of four, five, or six per cent. It acts in a

similar manner to mydrin. Two or three drops of the four-per-cent solution placed in the conjunctival sac dilates the pupil in about one-half hour. Its effects last longer than the former drug, but it does not affect the accommodation in some cases, while in others it does.

Carbolic Acid Poisoning Successfully Treated with Alcohol.—

H. Rodman, in the *Medical Record* of July 14, 1900, reports the case of a woman 60 years of age who took two ounces of pure carbolic acid. The poison was taken by mistake. When first seen she was unconscious, the pulse was thready and scarcely perceptible, there was extreme dyspnea, the face was congested, and the lips were cyanotic. The conjunctival and pupilary reflexes were absent. The extremities were limp and cold. The rectal temperature was 96.2°. An eschar had formed on the lips and tongue. A stomach-tube was introduced into the pharynx and four ounces of pure alcohol administered through the tube; this was allowed to remain two or three minutes, and the tube was then introduced into the stomach and its contents washed out with warm water. The stomach was again washed out with diluted alcohol and the stomach-tube withdrawn. At the end of twenty minutes consciousness was returning, the pulse had improved, and the breathing had become less frequent. There was vomiting, and the bowels moved twice. Strychnine and other cardiac stimulants were employed. Whiskey was given hypodermically at frequent intervals. Within a half-hour the patient was in a cheerful mood, with some mental excitement, probably due to the alcohol. There was no epigastric pain or abdominal tenderness. With the exception of pain in the naso-pharynx, which had not been treated with the alcohol, there was no discomfort. On the evening of the day on which the poison was taken the temperature was 102° F. and the pulse 110, but of good quality. The urine, which had been taken with the catheter, was brownish-black, of sufficient quantity, and contained no albumin. On the third day the temperature and pulse were normal; as was the urine, and on the fifth day the patient required no further attention. Three weeks later she was in excellent health.

Cannabis Indica.—

H. E. Lewis, in *Merck's Archives* for July, 1900, says that the uses of cannabis indica are manifold, but it is only valuable in cases due to nervous derangement. Pain not due to distinct pathological changes is usually relieved by the drug; hence it is useful in

migraine, neuralgia, and headaches from eye-strain. It is also valuable in the pain of multiple neuritis and ataxia, and is often useful in relieving the chest pains of phthisis. As a hypnotic it has only a limited range of usefulness, though it is occasionally successful in combating the sleeplessness of neurasthenic patients. In the various neuroses accompanying pregnancy and the climacteric, he has found it satisfactory. In certain malarial conditions, accompanied by severe headache and nervous symptoms, it is a valuable adjuvant to quinine. Dysmenorrhea not due to anatomical inflammatory causes is almost immediately relieved by the drug.

He believes that cannabis indica exerts a powerful influence upon muscular contraction, and while it may not initiate uterine contraction, his experience has shown him again and again that the presence of the merest contractile effort is enough to induce its full effects. It is therefore of some service in uterine hemorrhage, but its action is much milder than that of ergot. It is frequently useful in profuse menstruation, decreasing the flow without completely arresting it. The aphrodisiac effect, to which so much importance has been attached by the older writers, he was not able to confirm. In irritable conditions of the urethra it may be of some use, and in those depending upon lack of muscular tone. The benefit obtained, however, is usually transitory.

Pneumonic Plague Treated with Large Doses of Carbolic Acid.—

J. Bell, in *The Lancet* of July 7, 1900, reports the case of a Greek sailor aged 24, admitted to the Government Civil Hospital, Hongkong, April 17. The temperature on admission was 101° F., and for the next two days kept slowly rising. Three days later he was apathetic, the temperature being 105° and the tongue dry and furred. There was no dulness of the lungs, but coarse râles were heard all over the pulmonary area. There was an abundant expectoration of thick, bloody sputum, which on examination was found to contain the plague bacillus. Hypodermic injections of digitalis and strychnine were given every four hours, and twelve grains of pure carbolic acid every three hours. The patient was delirious at the time treatment was begun, and remained so for the remainder of the day, the temperature ranging between 105° and 106.4°. On the next day there was a marked though slow change for the better, the temperature slowly falling to 102°, and only rising to 103.4° in the evening. Seven days after admission the temperature was normal, and the sputum was no longer bloody, but it was abundant for the next two days. The carbolic acid was continued for four days,

after which convalescence was rapid. In speaking of the case, the reporter says that this form of plague is extremely fatal, and he knows of no cures. The case came under treatment early, and the patient was strong and healthy. The effect of the carbolic acid was marked. It is now being tried in every case admitted to the plague hospital. In all, the patient received 280 grains of carbolic acid, with no symptoms of poisoning.

The Physiological Action of Phenacetine.—

H. C. Wood and H. B. Wood, in the *University Medical Magazine* for July, 1900, say that it is remarkable that so little is known of the physiological action of phenacetine, while its therapeutic value is so thoroughly appreciated. One of the greatest difficulties of its study is its slight solubility in water. The writers were unable to introduce sufficient phenacetine hypodermically to destroy a frog, but they did find that if the animal was allowed to remain in a saturated watery solution of the drug, a sufficient quantity of the drug was absorbed through the skin to cause death. The first distinct manifestation of the action of the drug was a sluggishness of movement, which appeared in about two hours. In one or two instances there seemed to be a slight motor excitation preceding the depression. The paralysis was evidently of spinal origin. In nerve and muscle preparations there was no distinct loss of power noted, even after prolonged exposure to the drug. In studying the effect of phenacetine on the circulation, a mixture was used in which the drug was suspended in a 0.7-per-cent salt solution. In ordinary amounts there was no effect on the blood-pressure. Doses of five grammes of phenacetine per kilo of body weight caused death from respiratory failure. While there was no marked alteration in blood-pressure, the circulatory apparatus seemed to be lessened in power. The dose which was found to kill by respiratory failure was equal to about one ounce in a 150-pound man.

The Treatment of Rachitic Deformities.—

James K. Young, in the *International Medical Magazine* for July, 1900, says the most frequent form of rachitic deformity met with by the general practitioner is that which comes on in infancy. The intra-uterine, adolescent, and senile are by no means so common. The softening of the bones in rickets, which results in deformity, commonly makes its appearance from the fifteenth to the eighteenth month, and the process subsides at the age of three and one-half to four years. The tendency in all cases of rickets is

toward recovery. Sometimes there is a spontaneous improvement in rachitic deformities, but this is not to be relied upon. Rickets is easily prevented by improved hygiene, daily salt baths, and a diet suitable for the age. Bread and butter should be given in abundance, as well as meat. Tea, coffee, cakes, and candies are to be avoided. Cakes made of rye, wheat, barley, and oats in equal quantities are of value in the diet. The inunction of sweet oil and cod-liver oil is beneficial, the latter being alternated by the internal administration of syrup of hypophosphites in summer. He has used the following formulæ for years:

℞ Ol. morrhuæ..... oz. 6
Syr. calc. lacto. ph.....
Aq. calcis.....ää oz. 3

S.: One to two teaspoonfuls three times daily.

℞ Precip. chalk..... gr. 3
Calcis phos..... gr. 1 1-2
Iron lactate..... gr. 2-3

S.: One teaspoonful three times daily.

Hot Air in the Treatment of Nervous and Joint Affections.—

H. N. Moyer, in the *Therapeutic Gazette* of July 15, 1900, says that the physiological effect of extremely high temperatures is very striking. To reach and maintain these successfully, he has constructed specially designed machines in which the chamber for heating the part is much larger than in those found upon the market, and the arrangement for obtaining a rapid circulation of the superheated air is much more complete. In this way the wrappings of the part under treatment are kept perfectly dry, a condition essential in the proper application of the method. If the dressing becomes moist, due to an increase of transpiration, we have the effect of a moist pack and not of dry hot air. Great care must be exercised in the application of these high temperatures, because of the danger of blistering, the skin of patients varying in their susceptibility to the action of the heat. The most useful temperature he finds to be about 350°, a lower degree than this not giving those striking alterative effects. His best results in joint cases were obtained in patients with chronic synovitis with adhesions, in which the treatment was combined with massage and passive movements of the joints. He had excellent results in some cases of peripheral neuritis, the method proving especially efficacious in those obstinate cases of neuritis accompanied by inflammations of the joint. Marked relief was obtained in some cases of sciatica, and splendid results were reached in the treatment of a chronic myelitis.

Sodium Benzoate in the Treatment of Influenza in Children.—

H. B. Sheffield, in the *New York Medical Journal* of June 30, 1900, says that it is surprising that the question of prophylaxis and isolation has not received more attention in the treatment of influenza. Health authorities devote a good deal of attention to the prevention of measles and chicken-pox, and little or none to the spread of influenza, while the complications and dangers of the latter are much greater. One drug, in his experience, acts almost as a specific in influenza, and that is sodium benzoate. Under its use most of the symptoms subside within forty-eight hours. It may be combined with salol or with acetanilid when there is pain. A favorite prescription with him for the grippe is composed of:

℞ Sodium benzoate..... 1½ grains.
Salol..... 1½ grains.
Acetanilid..... 1½ grains.
Caffeine..... ¼ grain.

M. Make one powder. Sig.: One powder every three hours to a child six years old.

If the pain is severe and the child is kept awake, one-twelfth of a grain of codeine sulphate may be added to each powder.

In children where it is difficult to give powders the following fluid preparation may be substituted:

℞ Sodii benzoate.....
Antipyrin.....āā ʒ ss.
Liquor ammon. anisat.....
Syrup scillæ comp.....āā ʒ ij.
Syrup altheæ..... ʒ jss.
Aquæ anisi.....q. s. ad ʒ ij.

Sig.: One drachm every three hours to a child six years old.

An Immunizing Cure for Hay-fever.—

H. H. Curtis (*Medical News*, July 7, 1900) had his attention attracted to the possibility of immunizing in this disease by a couple of instances that came under his observation. A young woman was easily affected by ipecac, which would cause an acute coryza. She was employed in a wholesale drug house, and when she was compelled to go into the room where this substance was being handled, she found that she was very promptly affected by it. This could be prevented by taking a few drops of the syrup of ipecac.

Another case was that of a physician who suffered a violent coryza after inhaling the odor of salicylic acid. This never occurred if at the time he was taking salicylate of sodium. These facts led the writer to attempt immunizing hay-fever patients. For this purpose he had prepared both fluid extracts and tinctures of rag-

weed, lily-of-the-valley, and goldenrod. These were given, with immediate relief to the symptoms, in some eight or ten cases. Some of the patients were very severely affected. In one patient, who for ten years had suffered with autumnal hay-fever which began August 19 of each year, the symptoms were so severe that both nostrils were closed most of the time; he could not lie prone, and the paroxysms of sneezing were very depressing. The attack would last until November, gradually decreasing as cooler weather came on. The use of the remedy in his case resulted in a marked improvement in forty-eight hours.

Petroleum in the Treatment of Disease.—

W. D. Robinson, in the *Medical News* of July 14, 1900, says that the ordinary literature in relation to the treatment of consumption with the use of petroleum oils shows that these are not absorbed by the intestinal tract, and that all that is ingested may be recovered in the discharges from the bowels. From this it is claimed that they are devoid of therapeutic power, excepting in so far as they act as a lubricant for the intestines, and thus make the bowel movements easy. This, however, does not accord with his experience, as in fifty selected cases of phthisis, in which the body weight was much impaired, the patients without change of climate, and those who had not been given other treatment, showed in every instance an improvement in health, strength, and a feeling of well-being. The gain in weight was between five and a quarter and twenty-three and a half pounds. The remedy gave no discomfort in any instance. The author argues that its effects are due to the changes which are produced in the intestinal tract, and that it acts mechanically by inhibiting the growth of microorganisms, and coats the intestine with a non-irritating substance. The petroleum oil is an admirable vehicle for the administration of salicylic acid, beta-naphthol, thymol, camphor, and iodoform.

Treatment of Syphilis.—

Jonathan Hutchinson, in *Treatment* for June, 1900, gives his recent views on the treatment of syphilis. In his judgment syphilis is a milder infection than was formerly the case. Mercury is regarded as the universal antidote, but it is not essential, as the disease may recover spontaneously. Excision of the chancre, if done early—within the first week or ten days—has, he thinks, an influence favoring a mild course of the disease. The common custom of waiting until the secondary symptoms have manifested themselves

before mercury is administered is unwise. In his judgment the continuous administration of mercury is the most efficient method; the continuous being distinguished from what he calls the symptomatic administration, in which the drug is given only when the symptoms of the disease show themselves. He prefers the internal administration to either inunction or injection. He employs one grain of gray powder in pills, three times a day. The drug is combined with one-fourth grain of opium, and for the first week is given three times a day; later, this is increased to four times and then to five times a day. The treatment is continued for about a year.

Honthin, a New Intestinal Astringent.—

F. Kolbl, in the *Wiener Klinische Rundschau* of June 24, 1900, describes a new intestinal astringent belonging to the tannin group. It is a substance somewhat similar to those which have been recently placed on the market under the names of tannigen and tannalbin. Most of these combinations of tannin with other substances have the merit of being only to a trifling extent absorbed by the stomach, they making their way unchanged into the intestine. The new preparation honthin is said to be even more efficient in this respect, as it exerts a local action in the large intestine, some of it being excreted without being acted upon. It is a grayish-brown powder, free from odor and taste, and not soluble in water. It is not soluble in alkaline mixtures, but is feebly so in alkaline fluids. It is to this fact that its peculiar medicinal qualities are due. It is given internally in a dose of from 40 to 120 grains daily. It is said that the medicinal effect of the substance is due to the combinations which it forms with albuminous and mucous secretions of the intestinal tract, by which they are coated over with a substance which is more or less antiseptic and alterative in its action, as well as being an astringent.

The Comparative Germicidal Action of Some Disinfectants.—

A. H. Burgess, in *The Lancet* of June 23, 1900, gives a comparative study of the disinfecting power of certain drugs. Pure cultures of the bacillus coli communis were prepared, and silk threads exactly one inch in length and of the same size were exposed to the action of the disinfectant. The tests were identical, the exposures being one, five, ten, thirty, and sixty minutes. The weakest solution that would destroy the bacillus in the time named, and the next strength that failed to destroy it, are given. The various disinfect-

ants in the order of their efficiency were found to be biniodide and perchloride of mercury, chlorinated lime, formaldehyde, lysol, and carbolic acid. A number of commercial disinfectants were found to be comparatively inefficient. According to the writer's dictum, boric acid has no claim to be regarded as a disinfectant, as its saturated solution failed to destroy bacilli, even when they were exposed to it for one hour.

Chloretone.—

An editorial in the *Therapeutic Gazette* of July 15, 1900, says that this substance is useful in treating the obstinate vomiting which sometimes follows etherization after abdominal operations. The drug seems to have a local anesthetic effect on the stomach, and it quiets the patient and produces sleep. In this respect the action of the drug is in marked contrast to chloral, which usually irritates the stomach. The writer has not noticed that it causes circulatory or respiratory depression when given in doses sufficient to produce sleep. He has used it in a number of instances in alcoholics and has found it to act well. The drug is best given in sugar-coated tablets, but it is readily dissolved in a little warm water, and its taste is not so disagreeable but that it may be readily taken.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Posterior Colpotomy.—

C. G. Cumston, in the *Boston Medical and Surgical Journal* for July, 1900, in some general remarks on the symptomatology and pathology of acute suppurative processes, says that an experience of six years has demonstrated that posterior colpotomy is a highly conservative operation. It may be performed in cases of acute purulent accumulations in the pelvis where it would be dangerous to perform laparotomy or vaginal hysterectomy. Posterior colpotomy should be preferred in young women where the pelvic organs should be preserved. This conservative operation in no way interferes with radical operation, should it be deemed necessary later on. He has never seen fistula follow. Every suppurating collection that is accessible is suitable for this operation.

In the majority of cases the operation is one of emergency, and consequently no very elaborate preparations can be made. All that is needed are two ordinary hysterectomy valves, those of Segond being preferred; a few artery forceps, two stout tenaculum forceps, a long

pair of curved scissors, two large glass or rubber drainage-tubes, and an irrigator. Those who speak of this method as operating in the dark do so because of improperly constructed retractors. The patient must always be in an exaggerated Trendelenburg position.

With the patient in this position, the posterior vaginal wall is put upon the stretch by drawing the cervix upward toward the pubis. A transverse incision is then made in the vaginal mucous membrane where it joins the cervix. The finger is then introduced, and adhesions are rapidly broken down until the peritoneum is felt. This is incised, keeping close to the posterior surface of the uterus. Occasionally the purulent collection presents so low down in the cul-de-sac that the abscess cavity is opened at the time the incision is made. After the incision the pus flows out freely, and the cavity should then be explored with the finger, breaking down any septa or pockets that may be present. In case a distended pus tube is found, it may also be opened, providing adhesions have formed, when the operator is assured that there is no danger of infecting the general peritoneal cavity. The cavity is then washed out with an antiseptic solution and free drainage provided by a rubber or glass drain. There is the usual packing and antiseptic occlusive dressing.

This operation the author thinks is a useful preparatory step in those cases requiring a vaginal or abdominal hysterectomy. Purulent pockets are in this way emptied and drained, thus admitting of a general improvement in the condition of the patient. In those cases in which pus is contained in the minute cavities so that the tissues form a purulent spongy mass, this operation is insufficient, but in doubtful cases the vaginal incision may be made, permitting of thorough exploration, without detriment to a more radical operation. In those collections of pus which are situated high up in the pelvis, the operation cannot be employed, as they cannot be reached by the finger and successfully drained. In dealing with acute suppurating salpingitis, the serious general condition of the patient often determines the evacuation of the pus, as the more radical operation is particularly grave in these cases. In closing his paper, the author says that this operation is advisable in the majority of cases, and is a comparatively simple one.

The Relation Between Dysmenorrhea and Appendicitis.—

A. MacLaren, in the *American Gynecological and Obstetrical Journal* for July, 1900, says that inflammatory diseases of the ovaries and the Fallopian tubes and adhesive deformities of the uterus are at times the causes of dysmenorrhea. The close relation which

often exists between the vermiform appendix and the right tube accounts for the frequency with which inflammation in one structure affects the other. In one hundred of Kelly's operations on tubes and ovaries the appendix was found adherent in twenty-seven cases, and in seven it required removal. Robb also states that purulent salpingitis is at times due to an extension of an infection from a diseased appendix. The writer's experience is that out of fifty-eight cases where inflammatory appendages have had to be removed, the appendix has shown enough evidence of disease to justify removal in twenty cases. In nine of these cases the adhesions between the appendix and the right appendage have been very intimate. Aside from well recognized cases of appendicitis, there is an appendiceal colic which recurs at each menstrual period. These mild inflammatory attacks, which are commonly described by the patient as taking cold, are probably mild attacks of appendicitis. It is perhaps not a true attack of this disease, but an appendiceal colic. The only way to relieve such cases is to remove the appendix, and it has occurred to the author that this may be the explanation of failure to relieve some few cases of dysmenorrhea by ordinary treatment.

The Confusion of Two Different Diseases under the Name of Rubella.—

Clement Dukes, in *The Lancet* of July 14, 1900, says that among the eruptive fevers of children there is what he terms, for the want of a more distinctive title, a "fourth disease," which is perfectly distinct from measles, rose rash, and scarlet fever. For the distinguishing of this separate infection he relies largely upon the fact that in most eruptive diseases one attack confers immunity for that disease, the exceptions being so rare as to constitute medical curiosities. This fourth disease resembles very closely scarlet fever, but he has never observed the slightest inclination of the disease to pass into true scarlet fever, there always being a well marked line of distinction between the two diseases. He claims that this hitherto unrecognized infection is quite distinct from scarlet fever, the differences between the two being as much as those between typhus and typhoid. The constant confusion of this specific infection and scarlet fever causes infinite trouble. The writer's attention was first called to this subject by an extensive non-fatal epidemic which raged throughout England in 1892 and 1893. This, he now believes, was an epidemic of the fourth disease, as it occurred out of the scarlet fever season. Since then he has studied a number of epidemics of the exanthemata, and he finds that some of them resemble mea-

sles, and these are classed as cases of rubella. Another series of epidemics will resemble closely scarlet fever, and yet are not cases of that infection; it is this particular exanthema that the author names "fourth disease."

Red Light in Measles.—

The researches of Finsen have shown that the ultra-violet rays of the solar spectrum have an irritating action upon the skin, and sometimes produce an erythema. During the course of an eruptive fever, it has been noted that the inflammatory reaction in the skin is much greater in those parts which are exposed to the sun's rays than in those which are covered, and, in consequence, the cicatrices which follow are much more marked upon the face than in other parts of the body. These have led a number of French writers to employ red rays in the treatment of the skin eruption. Chatiniere, in *La Presse Médicale* for September, 1898, and April, 1900, has descriptions of a dozen cases of measles which were treated by simply suspending before the window some red cloths, thus exposing the patients to the action of the red rays alone. At night a red lantern was used to illuminate the room. It is reported that all of the patients made rapid recoveries, with rapid involution of the eruption. In some cases it is said that the disorder is actually jugulated, and there is a rapid disappearance of the fever and bronchitis. Chatiniere claims that under the influence of the red rays the eruption disappears more rapidly in the parts that are exposed to the light than in those which are covered. The rapidity of improvement was variable in different cases. In some a single day's exposure to the red rays was sufficient to produce a very marked improvement or a practical recovery.—Editorial in the *Archives de Médecine des Enfants*, July, 1900.

Sclerosis of the Pancreas in the Gastroenteritis of Infants.—

M. A. Arraga and M. M. Vinas, in the *Archives de Médecine des Enfants* for July, 1900, say that while serving as internes in the Hospital of Saint-Louis of Gonzague they were impressed with the fact that in a number of autopsies upon children who had died from gastrointestinal alterations there was frequent alteration of the pancreas, amounting in some cases to a distinct sclerosis. These observations were the more surprising from the fact that the literature has very little upon this subject. The works of Grancher, Comby, and Marfan, while describing intestinal inflammations in all forms with great wealth of detail, have nothing to say upon the

alterations of the pancreas. This gland is of the utmost importance in digestion and has a marked influence on the general nutrition. The authors believe that the pancreas has an "internal secretion" which is not at present understood, and which is of very great importance in maintaining the nutrition of the body. A description of ten autopsies is given, in which more or less marked change in the pancreas was shown. Those in which the sclerosis was present are believed to have resulted from the propagation of the inflammation from the intestinal tubes along the duct of the pancreas, until the parenchyma of the gland was affected.

Fresh Butter in the Constipation of Nursiings.—

An editorial in *La Presse Médicale* of June 6, 1900, says that nurslings which are raised on cow's milk frequently suffer from constipation. Where there is no other gastrointestinal complication, fresh butter may prove of service. Nurslings of two and three months receive morning and evening from one-half to one teaspoonful of fresh butter. This amount may be increased to two or three teaspoonfuls administered once each two days to infants who are older. It is said that the butter is readily taken by infants, and a bowel movement generally follows four or five hours after its exhibition. Not only does the constipation disappear, but the secondary effects caused by the stagnation of fecal matter in the intestine are overcome. It is especially valuable in infants who have a tendency to rickets and anemia.

Relative Value of the Vaginal and Abdominal Operations in Extirpation of the Peivic Organs.—

L. G. Richelot, in *Annals of Gynecology and Pediatry* for July, 1900, says that in uterine fibroma the two methods of vaginal and abdominal extirpation are of equal value; each has its indications, but the abdominal method is most often indicated. In fibroids, the vaginal hysterectomy can no longer claim the same superiority as formerly. In cancer of the uterus, vaginal hysterectomy is superior to every other method. Prolonged survival obtains in not less than ten per cent of the cases, and many of the cures seem to be final. The operation of election is one which precedes infiltration, and not that which pretends to pursue it through the pelvic cavity. Abdominal hysterectomy is an extra resource in a very limited number of cases, but it is not to be used in rapidly spreading cancers, and for those which are circumscribed it is not necessary. In pelvic suppurations the methods to be followed depend upon the indications of the

particular case; improvements in technique have given a value to the suprapubic method, and it ought to be performed in certain cases. In most of these cases, however, vaginal hysterectomy is the operation of election.

FORENSIC MEDICINE.

Suggestion and Mental Instability.—

In the May issue of MEDICINE, 1900, under the above title, we have a reference to the case of Crook *vs.* Crook and Horrocks. We refer to this celebrated case again for the purpose of extensively quoting a recent analysis of the case by C. Mercier in the *Journal of Mental Science* for July, 1900. In the action Dr. Crook sought a dissolution of marriage on the ground of the adultery of his wife with Dr. Horrocks. Mrs. Crook suffered from some uterine trouble, and on her husband's advice she visited Dr. Horrocks at his consultation rooms, the attendance lasting at infrequent intervals from November, 1896, to October, 1898. In November, 1899, she said suddenly to Dr. Crook: "I have something I must tell you. I have broken the seventh commandment." She repeated the statement in various forms, and also said that Dr. Horrocks had a most extraordinary influence over her. After making the confession, she said to her husband, "What does committing adultery mean?" Subsequently she made a confession in writing. The witnesses who testified in the case agreed that she was a woman of very ladylike and modest demeanor.

In July, 1899, Dr. Crook consulted a woman who professed palmistry, and was much impressed with what she said. This he communicated to his wife, who subsequently consulted the palmist; the latter told her that her marriage lines were broken, but not by death, and that she had been unfaithful to her husband. Dr. Crook began proceedings, and Mrs. Crook consulted Dr. Savage, who suggested that her trouble was only hysterical fancies, but she insisted that her confession was true. Later on, however, she declared that the whole thing was a delusion on her part, due to the powerful impression made upon her by the declaration of the palmist. The jury disagreed, being equally divided.

Such is a brief synopsis of the case which Dr. Mercier ably discusses. He points out that the confession, which was uncorroborated, was subsequently withdrawn. Mrs. Crook adhered to it for several months, and was fully aware of the consequences which it

would entail upon herself and Dr. Horrocks. He discusses her motive in making the confession under two heads: first, supposing it was true; secondly, supposing it was false. Supposing that her confession was true, the motive naturally alleged was remorse, or perhaps to unburden her mind. There is nothing inherently inconsistent in a confession being delayed for months or even years. Granting that Mrs. Crook was in all respects sane at the time of her confession, either her story is true, or in confessing falsely she was actuated by an undiscoverable sane motive. The circumstances of her life are so well known, however, as to practically exclude this hypothesis, so that the jury had to determine whether Mrs. Crook's statement was true, or whether it was the outcome of a disorder of the mind.

"*Prima facie*, her story is improbable in the extreme. She herself is a woman not only of irreproachable record, but of the most marked and distinguished modesty of demeanor. On the other hand, Dr. Horrocks's record is equally irreproachable. The members of every calling live, with respect to their colleagues in that calling, in houses of glass. Every carriage-builder in Long Acre knows of every other carriage-builder in that street, whether his work is honest or shoddy, how he treats his work-people, and all the details of his modes of managing his business. Every solicitor in London knows enough about every leading firm of solicitors to be confident as to whether in dealing with them he may expect fair treatment or sharp practice. And every practitioner in the neighborhood of Cavendish Square knows quite well the general ethics of all the leading consultants in their dealing with their patients. If a surgeon has ever so slight a tendency to operate too frequently, if a specialist takes ever so little too generous a view of the limits of his specialty, if any practitioner is the least inclined to see his patients too frequently, every one knows of it. All of his colleagues are quite well aware of his peculiarities, and if such a thing should happen as that a physician should exhibit gallantry toward his lady patients, not only would all the Portland estate ring with it, but not a practitioner in the country but would hear of it. That a man against whom the slightest shadow of suspicion of such a thing could exist could have been recently elected to the examinership of the London University is utterly out of the question. And yet, if we are to believe Mrs. Crook, we must believe, not only that this modest, delicate-minded woman, who did not even know the meaning of the word adultery, kissed Dr. Horrocks the first time she ever saw him, and committed adultery with him the second time, but

that Dr. Horrocks belied the record of his lifetime by displaying toward a patient, and that patient the wife of a brother practitioner, conduct that would revolt a Yahoo. *Nemo repente turpissimus*, says the old adage. How, then, shall we believe that any man, least of all a man of acknowledged probity and honor, could become *turpissimus repentissime?* Such considerations compel us to turn to the consideration of the state of mind of Mrs. Crook, to see whether in that we can find an explanation of her confession."

When Mrs. Crook withdrew her confession, she attributed the delusion to the palmist. Her own account is that she was shocked and horrified at the statement until she persuaded herself that it was true. After three months' brooding over the matter she made the confession. Such an explanation may seem very improbable to the average layman, but it has its counterpart in common experience, false confession not being very infrequent. No one who has witnessed the growth of an uneasy suspicion of general unworthiness into a delusion of weakness of a particular kind can doubt that in a susceptible mind the constant brooding upon a specific subject may lead to a delusion; the growth of delusions in this manner is quite a common occurrence. Such delusions are rarely traceable to suggestions from without, they usually coming from within, but it is easy to understand that if there exists a tendency to self-depreciation, a suggestion of criminality made from without in a positive manner by a person believed to have exceptional or supernatural knowledge would at once carry conviction and give rise to a delusion. There is no doubt that under the influence of suggestions people have believed themselves guilty of crimes that they had never committed, and the confessions were made with a full understanding of their terrible consequences. In closing, the writer says:

"If we balance the two alternatives—on the one hand, whether both Mrs. Crook and Dr. Horrocks suddenly and simultaneously underwent a sudden and total revolution in their whole natures, and gave the lie to the whole of their past lives, or, on the other hand, whether Mrs. Crook was the victim of a delusion arising under circumstances peculiarly provocative of delusion, and known to have produced delirium in many previous instances—we cannot, under the ordinary canons of probability, avoid giving our adhesion very decidedly to the latter hypothesis."

Private Hospitals Not "Charitable Institutions."—

The Court of Appeals of New York (*Journal of the American Medical Association*, July 21, 1900) has recently decided that private

hospitals are not "charitable institutions" within the meaning of an act recently passed by the New York legislature. The said act conferred upon the State Board of Charities the duty of visiting all charitable institutions. It holds that a charitable institution must be one that in some form or to some extent receives public money for the support and maintenance of indigent persons. By public money is meant money raised by taxation. The State has no right to examine and correct evils in institutions to which no one can be sent in pursuance of law, and which are purely private concerns; in which no one can be detained, and where the inmates can come and go at pleasure. A private individual may endow a private hospital, and when this is done it is his private property. No one is compelled by law to go there or remain there, and the manager is under no obligation to receive patients. It is purely a private concern. There must be some limit to the power of government to interfere in private affairs, and what is true of a hospital is equally true of other institutions. The court, in closing its decision, says that it believes that in any institution in which the inmates have perfect liberty of action the promptings of self-interest on both sides will regulate private charity without any governmental interference.

Dislocation of the Jaw in Epilepsy.—

C. J. Aldrich, in the *Philadelphia Medical Journal* of July 14, 1900, calls attention to two cases of dislocation of the jaw in epilepsy, which emphasizes the frequency with which dislocations, fractures, and similar accidents occur during the epileptic paroxysm. These accidents have considerable forensic importance, because of the frequency with which charges are brought by epileptics against attendants and others having the care of epileptics. As they are unconscious when the attacks occur, it is but natural that they should attribute them to rough handling by those who have the care of the patient during the seizure.

The first case was that of a woman aged 21, who for four years had been having occasional attacks of *grand mal.* Following one of these attacks it was noted that she could not close the mouth. Examination showed a complete dislocation of the jaw, which was reduced under an anesthetic. The second was the case of a man aged 25 and a confirmed epileptic. In the clonic stage of a severe seizure he commenced opening and closing his mouth with extreme violence. Soon it was noted that his mouth remained permanently opened. The dislocation was reduced with the aid of an anesthetic.

Acute Trional Intoxication.—

W. Coleman, in the *Medical News* of July 28, 1900, reports the case of a woman 35 years of age suffering from mild alcoholic delirium. Six fifteen-grain powders of trional were ordered, with instructions to take one every half-hour for four doses. The third day after this prescription had been given the writer was summoned, and found the patient in a somnolent condition, from which she was not easily roused. There were no disturbances of circulation or respiration. The patient complained of being dizzy and sleepy. The speech was thick and the gait ataxic, though she walked with slight difficulty. There were no sensory disturbances and no hematoporphyrinuria. Upon inquiry it was learned that she had taken nine drachms of trional in seventy-two hours. No treatment was ordered other than a saline purgative, and no further symptoms developed. From this case the writer argues that trional is devoid of any markedly depressant action upon the respiration or circulation. In the report the writer does not refer to those cases in which trional is taken for a long period of time. The case, so far as it goes, shows that the drug is free from depressing effects even when given in maximum doses, and that in large quantities the drug does not cause alarming symptoms.

Aniline Oil Poisoning.—

C. T. McClintock, in the *Therapeutic Gazette* of July 15, 1900, describes a case of poisoning from aniline oil, with a possible explanation of acetanilid poisoning. The patient was 23 years of age, and while engaged in carrying a vessel of aniline oil spilled some of it on his clothing. One hour later he was taken with severe clonic spasms, which were quickly succeeded by unconsciousness. The patient was taken without any premonitory symptoms, falling suddenly while at work, the convulsions supervening immediately. They were epileptiform in character and of short duration, succeeded by coma, which lasted twenty-five minutes. Then succeeded alternating spasms and coma, diminishing in severity for an hour or more, terminated by a deep sleep. The patient was markedly cyanotic, a condition which lasted for ten hours. None of the sequelæ of aniline poisoning, such as hemoglobinuria, diarrhea, or constipation, followed. The writer points out the striking similarity between aniline and acetanilid poisoning, and expresses the view that perhaps in the latter form of poisoning there may be separation of acetanilid into acetic acid and aniline oil, the latter being the toxic agent.

Diplococci, Resembling Gonococci, Found in Normal Vaginæ of Children.—

C. A. Rosenwasser, in the *Archives of Pediatrics* for July, 1900, has some observations which are of very great importance from a medicolegal standpoint. He recently noted the development of three cases in hospital, which were thought to be cases of true gonorrhea. He could not learn of the source of infection, as all children presenting evidences of a discharge of this character are carefully isolated. He therefore made a study of a series of spreads taken from apparently healthy children. These were found to show cocci, diplococci, and bacilli, as well as intracellular organisms, some of which were decolorized by Gram's method, and others were not. From this he comes to the conclusion that under certain conditions, not yet understood, discharges may develop in hospital cases, which cannot be distinguished by the ordinary staining and cultural methods from true gonorrhea.

Poisoning by Oil of Wintergreen.—

B. Pillsbury, in the *Medical Record* of July 28, 1900, reports the case of a middle-aged farmer who took two ounces of oil of wintergreen, thinking it was whiskey. The substance was taken at 4 P.M., and he continued at his work; two hours later there came on a copious diarrhea, which continued until death. In a domestic way mustard was given as an emetic, with the whites of a dozen raw eggs and a little water. He was not seen by a physician until 9 P.M., five hours after the drug was taken. He was then found to be sweating profusely, with a subjective sense of heat internally. The following day the skin was very red and the itching of the surface was intense. In the afternoon the pulse did not intermit, but it was very rapid. The odor of oil of wintergreen was perceptible in the bowel evacuations. Death occurred forty-one hours after the wintergreen was taken.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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ORIGINAL ARTICLES.

SOME GENERAL CONSIDERATIONS IN THE TREATMENT OF HYSTERIA AND NEURASTHENIA.[1]

BY B. C. LOVELAND, M.D., SYRACUSE, N. Y.

I will confine myself to some general considerations in the treatment of two of the very common functional nervous disorders, hysteria and neurasthenia, which are so closely related that much that may be said in relation to treatment will apply to both so far as principles are concerned, simply leaving the details to the physician's judgment in each case.

The reason that I have chosen this subject is the fact that so many of this class of cases, in the ordinary method of home treatment, become chronic invalids, when they might be restored to useful occupations. These disorders are of such frequent occurrence that scarcely any physician can fail to recognize them, though the fact that they so frequently coexist in the same person is not so generally recognized.

Among the causes which produce these neuroses heredity should be mentioned first, but many people with neurotic taint spend their lives without developing a neurosis if they are not reduced by physical disease, enjoy healthful environments, and have good habits. Hysteria and neurasthenia come from physical debility, overwork, worry, too much haste, the habit of doing or not doing things just as one feels like, without regard to judgment, and last but not least nervous shock, or psychical insult as it is called, whether induced by traumatism, fright, or any of the causes which produce a powerful and sudden impression on the nervous system.

The special points I desire to bring out in the treatment of hys-

[1] Read before the Cayuga County Medical Society, Auburn, N. Y., Aug. 9, 1900.

teria and neurasthenia apply equally well to both disorders, and may be arranged under five heads, as follows: (1) So far as possible correct errors of physique; (2) institute healthful surroundings, and healthful habits; (3) hydrotherapeutics and calisthenics as equalizers of the circulation, and natural nerve tonics; (4) correcting the mental attitude by properly and tactfully applied suggestion; (5) medicines.

1. In many cases of both neurasthenia and hysteria we find a physique undermined by disease which may be corrected. We should look for evidences of lithemia, malaria, uterine disease, syphilis, cystitis, catarrhal disease in any part, eye-strain, dyspepsia, and constipation — in fact, any disease affecting the nutrition, or any irritation which may be responsible in a reflex way for nerve waste, and so far as possible correct it. The means to be employed will vary, and be such as suggest themselves in the care of any of the conditions named, but it must be borne in mind that a cause which is insufficient to produce a reflex neurosis in one person may be quite sufficient to produce a good deal of trouble in one more susceptible to nervous influences. The free use of water should be enjoined, and the diet should be so ordered as to avoid highly seasoned or stimulating food, and all stimulating drinks, including tea and coffee, should be proscribed.

2. The home surroundings of many such patients are depressing, and mental depression is usually followed by physical exhaustion. If possible get the patient away from home, if only into another house in the same town, where everything can be controlled by the physician. Then open the windows and doors, and let in fresh air. Exclude all, no matter if a dear friend, who will not be cheerful, and above all they must mention nothing pertaining to disease or suffering in their conversation. The more radical the change of surroundings the better, but the effect of change soon wears off, and it must be followed by better habits and better nourishment in order to be permanent. Get the patient out-of-doors every day, walking, or at some amusement if able (as to ability the subjective sensations of the patient are not the best guide), otherwise in a wheel-chair, or hammock. Beware equally of the wheel-chair and hammock habit, for these patients easily become dependent on props.

3. In hydrotherapeutics and calisthenics we have powerful agents in the way of equalizers of the circulation, aids to nutrition, and nerve tonics. So simple a procedure as a quick, cool sponge bath on rising in the morning, rubbing dry quickly, and followed

by calisthenic exercise, will often yield most satisfactory, and sometimes remarkable, results. Both the temperature and time of the sponge bath, and the variety and number of calisthenic movements, should be prescribed by the physician. The bath should not be too cool at first, if the patient has only been used to hot or warm water; it can gradually be reduced, a degree each day, until the patient will react and feel good after the use of water between 70° and 80°. Hot bathing should be stopped, even though the patient insists that it is comfortable, except for cleanliness, which will not be oftener than once a week. In exercises I am accustomed to prescribe flexion and extension of the arms and legs while standing, bending forward and backward, bending sideways, first one side and then the other, sitting (squatting) down and rising up, and finally respiratory movements deep and forcible, usually starting the patient with three to five each, increasing one each every third day, until fifteen or more of each are taken. Of course, in different cases different movements suggest themselves as the patient may present developmental deficiencies. It will frequently be necessary to illustrate the movements, or have a nurse who has been instructed supervise them for a time. When a patient is unable to stand for the exercises it may be necessary at first to outline a course of exercise that may be taken in bed. A hot foot bath, of 110° for twenty to thirty minutes at bedtime, will in many cases induce sleep. In others a massage may be ordered where obtainable, or a hot and cold application to the spine, as follows: Have patient disrobe and sit on the edge of bath tub, first having provided a pail or basin of water at 106° to 110°, and another at 60° to 75°, a large sponge, and a small dipper. Then dip sponge in hot water and squeeze it out on the nape of the neck, repeating this three times. This is to be followed by pouring two or three dipperfuls of the cold water over the same territory, and afterward rubbing dry quickly, then going to bed. This will act as a tonic and great aid to sleep in some cases.

Other hydrotherapeutic treatments might be employed with great advantage, especially the spinal douche when used at proper temperature, and pressure, as also could electricity in some of its forms, the faradic being most useful to the general practitioner, on account of its portability.

4. Correcting the mental attitude of the patient. This opens up the whole subject of the influence of the physician over his patient, through the confidence the patient has or may have in him—in other words, suggestive therapeutics, a most important part of the treatment, and one which requires more knowledge of human

nature and more tact to be used to its best advantage than any of the other branches or divisions of the subject. In proof of the powerful influence of this branch of therapeutics one need only point to the hold the various forms of charlatanism, such as faith-cure, Christian science, mind-cure, etc., have on the public, and remember that such a hold could not have been gained but for some cures or apparent cures. It should also be remembered that it is not the use of any remedy which constitutes a quack, but the way one uses his remedies, and that, in a system of rational medicine, we are not limited in the use of remedies, but should use "any remedy, in any form, from any source, which experience has proven useful in the relief of suffering or the cure of disease."

Now as to its application: It is neither necessary to abjure and denounce all material remedies, nor to adhere to hygienic and hydrotherapeutic remedies alone, using colored sugar tablets as placebos, as a certain New York physician of some note does; but it should be used rationally, as a seasoner, so to speak, for whatever remedy we are giving, be it food, environment, exercise, or medicine. It will increase the efficiency of any remedy. Set your patient expecting such and such results, and the results are more likely to follow than if such a state of expectancy is not induced. It must be borne in mind, however, that many of these patients, no matter how weak mentally they seem to be, have most retentive memories, and are expert at argument; hence the necessity of weighing everything we tell them, and gauging correctly its probability of fulfilment, for if the doctor's prophecies fail and he cannot explain the failure not only to his satisfaction but to the satisfaction of his patient, confidence is lost, and with it the physician's influence. To obtain the best results an examination much more thorough than the physician might think necessary may assure the patient that nothing has been overlooked, thereby increasing his confidence. It is not necessary to apply tests of suggestibility, as is done now in some of the nervous clinics, for that takes one a little deeper than most of us usually wish to go into the subject of hypnotism; nor is it necessary to hypnotize except in the rarest instances, and such cases do not come within the scope of this paper.

5. Medicines. The multitude of so-called nerve tonics are good in their place, but many of them are overrated. Strychnine comes first as a nerve tonic, but in the cases under discussion it should not be used, as it often is, in doses that will be felt by the patient, for in such doses it becomes a stimulant, and should be avoided. In

very small doses, however, either alone or combined with other tonics or remedies, it is valuable. Valerian, or pil. camphor, hyoscyamus, and valerian, makes a good and at the same time harmless sedative. Bromides have their place, as have valerianate of ammonia and aromatic spirits of ammonia. Laxatives may be needed, in which case phosphate of soda is one of the best. Other medicines may suggest themselves as circumstances may indicate, but it should not be forgotten that medicine alone never cures these cases, and careful attention should be given to physical and mental hygiene, as most important factors in the treatment.

The subjoined reports will illustrate the main features of the treatment as carried out in individual cases:

Case 1. — Miss C. G——, 37 years old, came under my care August 30, 1893. The family history showed no special neurotic tendencies. She was well until the beginning of the present illness, which began seven years before, and followed a profound fright produced by the burning of her father's store. She took to her bed, and was treated for various ailments, including uterine displacement, but remained bedridden. Only twice, her mother said, was she out of bed for the seven years, and on those occasions she ran around wildly and fell in a fit, and was put back in bed. Both she and her mother said that at one period during the time referred to she did not swallow food or drink of any kind for eight months, during which time she became very thin, and was nourished by enemata. When she came to the sanitarium she was brought in arms, her mother accompanying her, bringing a feather bed and rubber air cushions for her to lie on. She slept about two hours in twenty-four, suffered with severe headaches, hyperesthesia of the spine and sciatic regions, was extremely thin, possibly weighing 80 or 85 pounds, still wore a pessary, and said she could not swallow water without vomiting. She had lost the ability to pronounce several consonant sounds, such as "l" and "g," and was constantly troubled with what she called a catch in her throat, which was in fact a constant endeavor to rid her throat of the feeling of a lump, and this sound of clearing her throat would interrupt her speech several, possibly twenty or thirty, times a minute. She had been under the care of one physician all the time and had the most implicit confidence in him, and he had told her that if she would come and put herself under my care she would certainly get well.

After making a careful examination I determined that her trouble was hysteria, and that her loss of flesh, the pain, and other physical troubles, were the result of her nervous affection, and that

my best plan of treatment would depend largely on mental or suggestive therapeutics. Hence I made it my first duty to build up as thorough a confidence as possible, explaining her symptoms to her when any logical explanation could be found, explaining the power of personal effort to control nervous symptoms, such as the "catch in her throat," telling her that if she would do her best to follow directions, which were most carefully given, one after another the nervous symptoms would disappear. I also pointed out the time and order in which they would disappear, being careful to keep my prophecies within what might be expected to occur. Definite diet and exercise was prescribed, changing or increasing in different directions each day as her confidence could be secured sufficiently to warrant her cooperation. The mother was sent home, the pessary removed, and the statement daily repeated that she was not sick, but weak, and that all her distress was due to weakness of nerves or muscles which would disappear as she regained strength, and that the only way to get strong was to use a proper diet and take regular exercise. Every change in diet and exercise was so placed before her as to gain her cooperation with the expectation of good results.

Her improvement was remarkable, the "catch" passing away in about three days, and in about the same time she was able to take and retain water. Her headaches became less frequent and less severe, rubber cushions and feather bed were discarded; she began to sit up a few moments at a time, then to take a step at a time, increasing daily until October 19, 1893, when she returned home. At that time she had gained about twenty-five pounds, was free from pain, had lost her headaches, recovered her speech, or her ability to pronounce consonants, had forgotten all about any pelvic weakness, and was able to walk a half-mile or more. The only remedies given were small doses of nux vomica and an occasional camphor, hyoscyamus, and valerian pill, and galvanic electricity, sponge baths, and massage. She remained well for one year, when she had a slight return of the *globus hystericus*, for which she returned to the sanitarium, but finding that I was on a vacation, and being prescribed for by another physician, she did not improve. After a few days she said to him, "If I could only have the same treatments I had when I was here before I know I would get over this very quickly." The physician saw the condition, gave her the treatments she mentioned, and in a few days she recovered. She is still well and weighs not far from 140 pounds.

Case 2.—Mrs. J. H. K—— was brought to me and placed in the House of the Good Shepherd on the third day of May last. She

was widowed, about 53 years old, good heredity, and a good past history, except that she had one previous attack of neurasthenia, from which she recovered two years before.

For several months after her return home after the neurasthenia referred to she was a surprise to her friends and herself, and all went well until about May, 1899, when she had a fall on the sidewalk, severely bruising her hip so that she was obliged to take to her bed for a time. After this her neurasthenic condition returned, and she also developed hysterical symptoms, as crying without good cause, fear of getting up to walk, etc. Her neurasthenia became so marked that her digestion was disturbed, she lost appetite and flesh, was fed on liquid food, and remained in bed much of the time until she was brought to the House of the Good Shepherd. She suffered excessively from eructations of gas, often accompanied by palpitation or tachycardia, was most troubled at night, had become very weak, and could neither read nor write, partly from her neurasthenic condition and partly on account of torticollis. Bowels were constipated. The diagnosis made was neurasthenia, especially affecting the stomach, with hysterical torticollis. Physical examination showed considerable gastric dilatation, great muscular relaxation, and emaciation, and a strong contracture with some hypertrophy of the right sternomastoid and upper half of right trapezius muscles. The treatment consisted in placing her in cheerful and new surroundings with a good nurse. A general diet, including almost anything but sharp acids and sweets, was prescribed, and for some time a glass of milk and a raw egg was given as added nourishment between meals and at bedtime. With some force, and with as much cooperation as possible from the patient, her head was straightened, and the nurse ordered to repeat the exercise several times each day, putting the head as far as possible in the opposite direction from that it was accustomed to occupy. General calisthenics such as previously mentioned were prescribed, with the addition of elevating one foot in the air and then the other while lying on the back, and then endeavoring to rise by the unaided efforts of the trunk muscles. She was given a cool sponge bath each morning, and a hot and cold application to the spine, such as has been described, each night. Faradic electricity was applied generally over the abdomen, and on the left sternomastoid and left trapezius muscles each afternoon.

The patient's condition was frankly and fully explained to her, and she was told that with her cooperation she should expect speedy improvement, and she at once assumed the hopeful and expectant

attitude of mind most helpful in such cases. The only medicines have been a tablet containing extract of nux vomica one-fourth grain, powdered rhubarb and soda bicarbonate of each one grain, taken after each meal. For a time these were discontinued and a nux vomica and asafetida pill used in place. On a few occasions also she has taken a pill of camphor, hyoscyamus, and valerian.

Her improvement has been all that could be desired. The attacks of gas stopped immediately, and have not reappeared, her stomach has regained its tone, the bowels are regular, and she can carry her head most of the time as straight as any one, though it will twist around yet if she gets very nervous or self-conscious. She has gained about nineteen pounds since coming under treatment.

While the foregoing may seem unnecessarily prolix, yet explicitness is necessary, as many failures in the treatment of these cases are due to a want of attention to details.

AN ETIOLOGICAL AND CLINICAL CONSIDERATION OF GRAVES'S DISEASE (EXOPHTHALMIC GOITRE).

BY FRANK PARSONS NORBURY, M.D., JACKSONVILLE, ILL.

Among the peculiar disorders encountered in clinical medicine none are more perplexing or more interesting than Graves's disease (exophthalmic goitre). It is a disease which baffles us in its etiological obscurity, and consequently our treatment is as yet more or less empirical. The recent literature on the subject seems to confirm the original theory that it is a disease of the nervous system (of the cervical sympathetic nerve).

Gordon (*Philadelphia Medical Journal*, June 16, 1900) says: "The theory based on the influence of the sympathetic nerve covers all cases without exception." However, there are other recent writers who are loath to drop the hyperthyroidization theory, and as confirmatory evidence along this line Jaunin (Progressive Medicine, June, 1900, p. 311) likens Graves's disease to severe iodism, saying that chronic iodism produces a condition which is indistinguishable from exophthalmic goitre. This evidence seemingly confirms the belief also advocated by Gautier that the thyroid function is disturbed by the use of iodine, for when the iodine is discontinued the symptoms disappear. We see that "the theory that iodism is the same condition as exophthalmic goitre is closely related to the belief that has become very general that the symptoms of the latter disease are due to excessive action of the thyroid, probably associated with perverted action." "The active constituents of the secretion of the gland seem to be the iodine compounds." Gautier does not favor the nervous theory, saying: "In spite of the attempts to make nervous changes responsible for the disease, all satisfactory evidence points against this."

Two theories thus have warm advocates, and we are left to draw our own conclusions. My clinical experience leads me to believe that there is truth on both sides, but that the preponderance of evidence is in favor of the nervous origin of the disease. My observations are based on eight cases during the past two years—five in my own practice, three seen in consultation. It is by reason of some unique features occurring in these cases that I am persuaded the nervous theory of the origin of the disease is right.

In order to more fully present these evidences I will briefly report some of the leading clinical features of my cases. I follow Murray (Twentieth Century Practice, vol. iv) in classification of symptoms, viz., primary and secondary symptoms.

The primary symptoms are the exophthalmus, the enlarged thyroid gland, and the accelerated heart action. Of these marked symptoms two at least are always present in every case of Graves's disease. Accompanying these symptoms are others which are usual and which may properly be classed as primary symptoms, viz., the tremor and the general nervous agitation of the patient. This group of symptoms is usual in every case, but we may still have the disease present without the enlarged thyroid, or at least with slight enlargement; or, it may appear as an early symptom and later apparently disappear, the other primary symptoms remaining. This has occurred in one of my cases of five years' standing. The enlarged thyroid was an early symptom in all my cases, and in one it attained quite conspicuous proportions, appearing as large as in parenchymatous goitre. However, this size varied with the nervous agitation of the patient—*e.g.*, after a fright. In one instance the patient was out boat-riding, and some one accidentally collided with the boat. She became nervous and hysterical, and with this emotional excitement the thyroid became enormously enlarged.

The goitrous condition usually precedes exophthalmus, and in some cases the exophthalmus may be wanting. It is present in about 80 per cent of all cases. I have seen but one case in which it was wanting, and in this I believe it may yet appear, as there is some prominence at times. This is apparent when she has exaggerated nervous symptoms. Thus, she has been in school the past winter taking special work, and also continuing instruction in music, of which she is very fond. If she overworks, especially during menstruation, or if she develops a cold, then the eyes have a staring and startled expression.

The heart symptoms are present, I believe, in all cases, and are in fact the differentiating feature of the disease. The accelerated pulse is usually the first symptom to attract the attention of the patient; and in truth, it is usually the first constant symptom developed. It may appear after a fright, as in one of my cases. A young lady saw her escort set upon and "held up" by footpads. Immediately after this exciting experience tachycardia developed and continued uninterruptedly. Finally the other symptoms of Graves's disease appeared. The heart-beats are increased in force as well as in number, and the valvular sounds are loud. Musser says they may be heard several feet from the patient. I have not noted this, but I have seen a loose headboard of the patient's bed shake with each pulsation of her heart, which was also marked even in the smaller arteries. The pulse usually is over 100; I have counted as high as 160, but an average of 120 has been my observation.

The nervous symptoms of the disease vary in each case, but tremor is almost constant. It may be late in developing, as in one of my patients it was not marked until after the three cardinal symptoms were all prominent. The tremor may be very slight, and only noticed when the hand is extended and slightly abducted. The tremor affects the whole hand and not the special muscles of the hand. This is shown by the fact that one of my patients is still able to use a piano with skill, even though the hand, when at rest, is in constant tremor. In most cases the tremor is conspicuous in all of the extremities, and is exaggerated when attempts to execute any movement are made. The general nervousness was quite marked in all of my cases. Headache was almost constant in three cases, insomnia in four. This varied from time to time.

A general feeling of apprehension, of nervous tension, and a tendency to worry are marked symptoms. The mental symptoms vary from a feeling of mild depression to even mania and deep melancholia where insanity results. I have noticed the mental condition to be worse at times. Two cases of insanity have come under my care, both of melancholy type. The physical symptoms are loss of flesh — one of my patients lost forty pounds in a few months, another twenty-five pounds in a few weeks, while another, strange to relate, took on flesh and gained probably fifty pounds in a year. The weakness of the legs is a conspicuous symptom. One of my cases complained of the legs giving way suddenly; she fell two or three times. Another complained of her ankle turning without any previous feeling of weakness or pain. Another lady complained of her hand giving way occasionally while lifting a cup. This condition, which Charcot called paraparesis, is marked by weak, flaccid muscles, and diminished reflexes. Painful cramps are sometimes noticed, especially at night. From my notes I find one patient complained of pains from the waist down, but with cramps only in the lower extremities. Accompanying these pains there oftentimes would be edema, but no pitting on pressure; the skin would be very tender, and even the genitalia seemed to suffer from these peculiar peripheral nerve phenomena.

A variety of other symptoms have been noted. In one case leucorrhea persisted throughout the intermenstrual period, ceasing during menstruation. In another polyuria was a distressing symptom, making it almost impossible for the patient to leave home. The various nervous and trophic symptoms, such as brittle nails, loss of hair, excessive sweating, edema, etc., have been noticed, also disturbance of digestion, etc., until in the eight cases studied I believe

I have seen in some one of them all of the varied symptoms ascribed to this disease. In addition I have noted one case in which extreme tachycardia was marked, with suddenly developed hemiplegia, and after a few days the patient died. Hyperpyrexia was a feature for two or three hours before death; and just before death temperature was 106⅘°, immediately after 107⅖°, one-half hour after 106⅖°, one hour after 107°, two hours after 101⅘° (axillary observation). This feature brings into prominence the clinical consideration of a local lesion as existing in the medulla oblongata which may have etiological relationship to the disease. It is certain that there was organic interference with the heat centers, for Wood has shown that hyperpyrexia in insolation is due to inhibition of the heat centers either in elimination or generation, and that hemorrhagic infarcts have been noted on post-mortem examination. Again, Mendel, Cheadle, Hale White, Stewart and Gibson, and others have noted organic changes in the medulla in Graves's disease, some probably of some etiological importance. Gordon's question is applicable in this case, viz.: "Whether any spinal or medullary disease of a progressive character is liable, through extension of lesions, to advance to the point supposed to be its localization and develop Graves's disease?"

The facts thus far observed clinically justify us, I believe, in accepting the theory that the disease is one of the cervical sympathetic nerve, and that it is the result of the irritation of the vasodilator nerves, and those nerves of the head and heart have their deep origin in the medulla. Gordon says it is "there we must look for the explanation. The sympathetic nerve sends its nervous filaments to the bottom of the orbit, thyroid gland, and cardiac plexus."

The hyperpyrexia locates the lesion in the medulla. Again, the patient complains of pain back of the eyes, and I would say here that several patients complained, as one expressed it, that "the eyes hurt back of the balls." This pain also was from irritation of the cervical sympathetic. Again, the exophthalmus or protrusion of the eyeball comes from "dilatation of the retrobulbar vessels," also a result of this irritation of cervical sympathetic. The tachycardia is another result of irritation, as the cervical sympathetic sends filaments to the heart.

I am convinced that the clinical features warrant the belief in the nervous origin of the disease. In addition to the foregoing cases, I have seen several insane patients afflicted with Graves's disease; their history, however, was obscure and the clinical study unsatisfactory. I have not, therefore, included them in this clinical summary.

EXAMINATION OF THE STOMACH CONTENTS.[1]

BY FREDERICK A. McGREW, A.B., M.D., DAVIS, ILL.

I. PHYSICAL CHARACTERISTICS.

Stomach Contents withdrawn at..... ..... $\frac{A.}{P.}$ M. After a.....

test meal taken at..... $\frac{A.}{P.}$ M. After a meal the previous evening at

..... After a lavage the previous evening at.....

Quantity.....oz. Color..... Odor.....

Reaction.....by Congo-red.....litmus.....Disintegration.....

Froth..... Filtrate.....oz. Residue.....grs.

Estimated total stomach contents (.....method)

.....oz. Normal quantity.....oz.

For purposes of examination we may avail ourselves of the material which chance vomiting offers, or we may withdraw the stomach contents by means of a stomach-tube of flexible rubber. Valuable information is sometimes obtained through the examination of vomitus, as in cases of gastric hemorrhage, pyloric obstruction, poisoning, etc.; but this method is much less useful in ascertaining the functional capacity of a stomach not grossly diseased but only moderately deranged. In the latter case the tube enables us to suit our own and the patient's convenience in obtaining the specimen, and to employ such tests as shall accurately fix the secretory and motile power of any stomach. Whichever way the stomach contents may be obtained, the processes of examination are essentially the same.

There are as many varieties of stomach-tubes on the market as there are dealers in physicians' supplies, and any one of these will answer the purpose. The most convenient, however, is a tube of medium caliber, No. 20 American, corresponding to No. 30 French, with funnel and bulb. There is a white line encircling the tube twenty-one to twenty-two inches from its stomach end. The tube should be thoroughly cleansed with hot water after each introduction, then boiled for fifteen minutes; after which it is rolled within the folds of a sterile towel.

The Introduction of the Tube.—The patient should be seated upon an ordinary kitchen chair. A sheet is spread out to cover the entire

[1] AUTHOR'S NOTE.—This article is the first of a series under this title which will aim at presenting such practical laboratory methods as may be useful to the general practitioner in the office and at the bedside. Though due credit may not always be given, because the original sources of some of these methods have been forgotten, any essential originality on the part of the author is disclaimed. The form which heads each subject is taken from the blank reports designed by the author and covers the subject in a comprehensive manner.

person from the neck down and pinned behind, and a towel is spread over the chest and shoulders. A large wash-bowl to receive the specimen is placed upon the lap of the patient, who is directed to grasp it by the edges. This gives him something to do, and keeps his hands from interfering with the introduction of the tube.

The tube is dipped in warm water to the white mark, and for the first introduction I usually lubricate so much of it with a little glycerin. The glycerin is not necessary, however, particularly after one introduction; but some patients are so alarmed that until the tube is down and they are breathing easily the normal lubricating secretions are partly suspended.

Before an attempt at introduction is made, the patient must understand that the process of taking the tube is simple and sure, that every one can do so, and that though they may fear they cannot breathe, they have but to try and they will find that breathing is as easy as though the tube were not in place. Some individuals swallow the tube easily the first trial; but the physician who has no failures in passing the tube must be cool, reassuring, confident, and bold.

When all is ready the physician stands on the right of the patient, the stomach end of the tube in his right hand, and telling the patient to swallow when commanded to do so, he inserts the end of the tube into the mouth to the base of the tongue. Now, directing the patient to swallow, the tube is, simultaneously with the act, pushed boldly but not forcibly in, and the muscles of the pharynx close around it and carry the end safely over the closed entrance to the larynx into the esophagus.

If the manipulation has been imperfect the tube will enter the larynx, which will cause great coughing and the sound of air in the tube; or it will double upon itself in the throat. In either event there is nothing to do but to withdraw it and make a second trial. Having engaged the end of the tube in the esophagus, it may be pushed at once on down into the stomach, regardless of the gagging of the patient; or, as I usually find a better way, successively direct the patient to swallow, and with each act push the tube down until by forced marches, as it were, it reaches the goal, which will be indicated ordinarily by the white mark appearing at the line of the teeth.

Sometimes during the introduction of the tube vomiting occurs. The patient has been previously advised, and ejects the vomit into the bowl, so that no part of the contents may be lost. Drooling of saliva usually occurs in large quantities, and unless care be taken

it will become mixed with the specimen. The patient therefore must not swallow that in the mouth, but let it run from the mouth into an extra towel. An assistant is useful in some cases to keep the tube in place; but occasionally, despite every effort, an uncontrollable and violent eruption will throw a portion of the stomach contents and the tube out together in one large mass.

The tube in place, the patient breathing freely, and gagging having ceased, the bowl or a graduated vessel is placed upon the floor and the bulb manipulated to get the flow started. Except in cases wherein the amount of contents is large, siphonage is of very little help, and dependence must be placed upon expulsive efforts of the stomach, aided by the bulb. Ordinarily some little time and manipulation is necessary, but five to ten minutes usually suffices to remove the contents. Should the tube become obstructed, as it will after a complex meal, the obstruction may sometimes be removed by forcing air through the bulb in a reverse direction; or a measured quantity of water may be used as indicated below for estimating the total stomach contents; or the tube be removed, cleaned, and reinserted. Finally, it may be mentioned that toleration of the tube soon obtains when it is used frequently for diagnostic or therapeutic purposes, and patients come to pass it themselves with ease and comfort.

Preservation of the Specimen.—If the examiuation of the specimen cannot be made at once, it should be put in a cool place to retard digestive and fermentative processes. All change is inhibited at the freezing point, while a temperature of 40° F. will preserve the specimen practically unaltered for several hours or even days.

Change is most rapid at 100° F. In the summer-time the specimen should be bottled and placed in a refrigerator. In the winter there will be no difficulty in securing the necessary low temperature.

Test Meals. — The test meal depends upon the information desired. The simplest test meal, consisting of a glass of hot water and unbuttered, thoroughly toasted whole-wheat bread, taken in the morning, fasting, yields excellent results when the gastric secretion is to be investigated.

The contents must be withdrawn at the end of one hour. Here, as in laboratory technique in general, much depends upon exactness. A cup of weak tea without sugar or cream may be substituted for the hot water for the sake of palatability, and shredded wheat or granose biscuit or zwieback for the toast.

Sometimes after such a meal the stomach is found empty at the end of the digestive period of one hour, the contents having been passed onward into the duodenum. Thus the apparent digestive

power is greater than the real. Sometimes the amount of gastric secretion is very little, much less than we ought to expect. These discrepancies and differences show that such a simple test meal fails because it is not usual, and does not stimulate the stomach as the ordinary meal does. However, it is easier to manage, gives desired information in most cases of a trustworthy character, and only requires discriminating judgment to be very valuable. It is the most used of any of the test meals. It is commonly called Ewald's test breakfast. When such a meal fails in stimulating the gastric secretion, a hard-boiled egg may be added at another trial, which will make a greater demand upon the stomach.

A *complex meal* furnishes a different sort of information from that given by the simple meal just referred to. It gives information regarding the duration of stomach digestion, the fermentative processes, and the power of the stomach to empty itself at the proper time. Any experimental complex meal should be as nearly like the ordinary diet of the individual as may be.

A beefsteak, breakfast food of wheat or oatmeal gruel, and bread constitute Leube's much-used complex meal. The duration of stomach digestion varies greatly in individuals, and in the same individual at different times; but it is safe to say that after seven hours the healthy stomach should be completely empty. After five hours it is usually almost if not quite emptied. By passing the tube after seven hours, again after five hours, and if empty then again after four hours, much valuable information may be easily obtained. If it is desirable to pass the tube but once, the time of choice will ordinarily be four and a half to five hours after a meal. If no contents be obtained by the usual manipulations, the stomach should be washed out to make sure it is empty.

If it be suspected that by reason of motor insufficiency or pyloric constriction the stomach does not empty itself, the stomach contents should be withdrawn in the morning before the patient has breakfasted, a complex meal having been taken the evening before.

If it be suspected that secretion goes on continuously during the intervals of digestion, as occurs in some chronic aggravated cases of hyperchlorhydria, the stomach should be washed out in the evening, and the tube passed the following morning, the patient meanwhile fasting.

In many cases two or three different tests are necessary before any exact knowledge is arrived at. Moreover, it is not always safe to base any arbitrary conclusions on the results of a single trial, and tests must be repeated at intervals. Indeed, in cases of neurasthenia I have found a hyperchlorhydria one morning, an anhydria the next,

and the third morning a condition which might have been considered normal.

Such information has a value; but if only one examination had been made and treatment based thereon, both diagnosis and treatment would have miscarried.

It has been my privilege to reexamine several cases coming from an institution where the results of the examination are tabulated in an exhaustive and ingenious manner, and treatment is prescribed according as the individual line zigzags in the red above normal, or the blue below. Beautiful, but misleading in all cases with a nervous element, as shown by the fact that these patients gave varying reactions to tests on different days.

The *quantity* withdrawn should be noted. It will vary with the kind of test meal, time of its withdrawal, motility of the stomach, rapidity of digestion, and the amount of secretion and absorption. After hot water and toast, which stimulates the normal membrane only enough to provoke sufficient secretion to form a grayish liquid of the consistency of thick soup, we should get from three to six ounces.

In one case of nervous dyspepsia I have seen the simple imbibition of one-half glass of milk give rise to such a quantity of gastric secretion that the patient vomited three pints of watery liquid. In other cases I have seen the stomach completely emptied in one hour. Again, the quantity exceeds the amount taken at the last meal, and contains indigested particles from a previous meal.

The *color* should be that of chyme, a grayish, when the period of digestion is at its height.

In complex meals the larger and smaller undigested and unreduced particles of food are intermixed with the thick, grumous, grayish mass. It may be cloudy and watery in hypersecretion, "chocolate" or "coffee" colored if containing blood, greenish if containing bile, and if hemorrhage be profuse a black coagulated mass may be vomited, or smaller particles of "coffee-grounds" appearance will be intermixed or appear as sediment.

Mucus mixes with the chyme as a yellowish, tenacious ingredient. Coloring from food, drink, or medicine must not be mistaken as of pathological significance.

The *odor* of the normal chyme is sour and more or less pungent. After a simple test meal, if the contents are chymous, the same odor is present. Where little or no free acid is present the contents have the odor of the toasted bread. If the secretion is excessive the pungency of the sour odor is more marked. After a complex meal the odor is usually sour, either from the free hydrochloric or free

organic acid present. In hypersecretion of watery liquid, the sour odor will be absent. In continuous secretion of normal acid the odor is pronouncedly sour.

Stomach contents from a case of ulcerating cancer have a foul odor—"stercoraceous" (Strumpell); "cadaveric" (Vierordt)—though not always so evident as one might expect. Vomit from uremic poisoning is quite characteristic in odor. The contents of a dilated stomach, often lying for days in a decomposing state, have a fetid odor, more easily imagined than described.

The *reaction* of the specimen is commonly tested by Congo-red or litmus-impregnated paper. Congo-red turns blue, and blue litmus turns red if free acid, organic or inorganic, be present. Litmus is the better test, though neither yields much crucial information. However, after a simple test meal, when blue litmus turned quickly and markedly red, I have yet to find the case in which free hydrochloric acid was not subsequently demonstrated by other more delicate and certain tests. If litmus shows free acid to be present, and other tests prove the specimen not to contain free hydrochloric acid, the acidity must be due to the acids of fermentation.

The *disintegration* should be noted. It depends upon the rapidity of eating, the care with which mastication is performed, the condition of the teeth, the activity of the stomach, and the quality and quantity of gastric juice.

The complex meal is necessary in order to study the disintegration. Many persons treat their stomachs as though they were gizzards, and bolt their food in masses. Owing to this fact, when a complex meal is given the large particles frequently block the end of the tube. At the simple test breakfast, when the functional capacity of the stomach is the chief matter of inquiry, the patient is usually instructed to eat slowly and masticate the food thoroughly. But when the inquiry is concerning the etiology of a dyspepsia, it is frequently as well to allow him to take his food in his customary way. Disintegration within the stomach goes on most rapidly with a normal motility and acidity. A lessened motility, or an over- or under-secretion of HCl, delays disintegration (M. Foster). The particles of food least disintegrated and least digested are passed into the duodenum last; consequently, if five hours after a complex meal the stomach contents show many undigested particles of meat, an under- or over-secretion of HCl is almost a certainty.

The rapidity of *filtration* and the amount of the filtrate should be ascertained. Filtration (Hallopeau and A. Mathieu) proceeds more slowly according to the amount of digestive products present. Mucus also retards the process by obstructing the pores of the

paper. Where a large amount of secretion is present with little peptone or mucus, the filtering goes on rapidly. When the filtering has ceased the residue may be evaporated and weighed, and the weight compared with that of the dry toast of the test breakfast.

The *estimation of the total stomach contents* is of value in cases of continuous or of hypersecretion, delayed digestion, a complex test meal, and in any suspected delay of the food in the stomach, as in dilatation. The following method is simple: After a portion of the stomach contents has been withdrawn, a known quantity of distilled water is introduced through the tube and a short time allowed for its thorough incorporation with the remaining contents. A portion of the contents thus diluted is withdrawn, and a comparison of the total acidities will enable the operator to calculate the total stomach contents.

For example: If the undiluted specimen contained 1½ grains acidity to 1 ounce, and the diluted ½ grain to 1 ounce, it would require three ounces of the diluted specimen to equal in grains acidity 1 ounce of the undiluted. Therefore, 2 ounces of water to 1 ounce of the contents must have been added. If, for instance, 8 ounces of water had been added, the stomach must have contained 4 ounces before the introduction of the water. Add this amount to the undiluted portion first removed.

To formulate a rule: Divide the total acidity of the undiluted specimen by the total acidity of the diluted; subtract one from the result, and divide the number of ounces of water added by the remainder. The result is equal to the contents before dilution. Add the amount of the undiluted specimen to get the total stomach contents. This procedure differs from that of Mathieu and Rémond. In their method the specimen first removed is diluted and returned to the stomach, enough of it being retained to enable them to calculate the total acidity. It has seemed to me useless to put back into the stomach contents already removed, especially as the amount saved out for estimation of the acidity of the undiluted contents must be included in the calculations to avoid error.

It has been my endeavor thus far to show how considerable may be the information obtained regarding the action of a stomach, by the employment of so simple an instrument as the stomach-tube, which requires little technical skill in its use, and that little easily acquired. There is, it must appear, no abnormal condition of the stomach about which the tube, properly used, will not bring to light information of value, and in many cases the evidence it furnishes is conclusive.

LONGEVITY OF THE LITERARY FEMALE.

BY E. C. SPITZKA, M.D., NEW YORK.

(*First paper.*)

In the course of some investigations connected with heredity, particularly as shown in the transmission to children, mostly males, of a weak and defective constitution, manifesting itself in hebephrenia, I found certain collateral facts which led me to study the influence of a literary occupation in the mother upon the offspring. As I stated in a paper read before the Academy of Medicine, contrary to the usual view, women affected with diabetes are not necessarily sterile. At least this is true regarding the glycosuria which develops at the approach of the climacteric period. Children born at this time, of healthy females, are—without any regard to the age rule—preponderatingly males; and, with remarkably few exceptions (still speaking of the healthy offspring of healthy parents), notable for lack of energy and a languid disposition. In the offspring of the diabetic female this disposition appears in an exaggerated form as one of the phases of hebephrenia or insanity of pubescence. As a few of these cases, but in their proportion a disproportionately large percentage, were the offspring of mothers who belonged either to the *bas-bleu* or emancipated female class, including several literati, I compiled from a series of tables devoted to other inquiries—such as the proportion of suicides and insanity in various occupations and in the sexes—a table which I herewith present.

Of sixty literary females who entered wedlock, several had married twice and a few thrice; so that there are seventy-seven unions represented by the sixty. Of these unions twenty-two became dissolved by separation or divorce, the remainder by death. Fifty-seven husbands were survived by four wives, and six wives died before their marital partners; of the remaining fifteen *ci-devant* husbands the date of death is not mentioned. Reckoning them, however, as neutral, the percentage of men marrying literary wives who survived their female partners is a fraction less than eight, while 74 per cent died before their wives. Excluding the cases of separation and divorce, even where a divorced husband was survived and another partner married (unless the date of demise of both the latter was known), there remained forty-eight females who either became widows, or left widowers; the former numbering forty-two, the latter six—seven times as many. Now, the proportion of

widowers to widows in the general population of the three countries England, France, and Germany, in 1875, was about as two to one (one hundred and eighty-nine widowers for every 100 widows); therefore, a remarkably higher vitality would seem to appertain to the literary female as compared with her sisters, namely, as it is 700 to 100 in their case, and 189 to 100 in the case of the others, their proportion of survivors would be as 370 to 100, or nearly fourfold. This impression seems strengthened when we note the following among the literary females: Lady Blessington survived her first husband thirty-two years and her second husband ten years. Cecilia d'Arrom survived three, respectively fifty-seven, forty-two, and fourteen years. Therese Huber survived the first thirty-six and the second twenty-five years. Mary Somerville survived her husbands respectively sixty-five and twelve years, and the crowned poetess Avellanada survived hers by twenty-nine and thirteen years.

Before hastily adopting the conclusions here indicated, it should be learned whether there is anything special in the contracting of such unions that might give the female a relatively instead of an absolutely greater chance of survivorship than her non-literary sister. It were not at all improbable that the average of men marrying the former did so at an advanced period of life, or that a larger proportion than ordinary of weak vitality, as some of them are notoriously of weak or unstable personality, seek or find their affinities in masculine females. Until this factor be excluded the conclusion above presented would merely add another to the cluster of facts illustrating the dictum that by statistics any and even the most contradictory propositions may be proven. Let us suppose this source of error eliminated. There would still remain one, possible opening in the other direction, namely, the high mortality among married authoresses in childbed, which I believe is relatively greater than in the average. Supposing this established, it would yet remain to be seen — lest the influence of this subsidiary factor be overrated—whether the proportion of married female writers becoming *enceinte* is the same as in the average female population. If found to be less, as I believe it to be, it would have to be considered before drawing any of the inferences, naturally suggesting themselves collaterally, as to their higher vitality being an index of a physiological value, whether the cause of their relative barrenness be an intrinsic or extrinsic one. A moment's reflection on the characteristics of a large proportion of their male partners shows the pertinency of entertaining some misgivings appropriate to that side of the union.

Eventually other considerations present themselves leading to reclassification in new rubrics, until these become well-nigh as numerous as the cases to be classified. In short, each case merits individual consideration. It is certainly worth noting that of the six surviving widowers five were themselves literary men and one an artist of literary aspirations, while those fifty-six who were survived by the forty-two widows had been largely men of leisure, or military and government officers, physicians, merchants, etc., and only five had been literary characters. As regards their relative vitality it would have to be taken into account that, of the five, two were lost at sea, while one died of Asiatic cholera; just as, of the remainder, two would have to be discriminated against as having died respectively by their own hand and the guillotine.

It would make a difference, however, as to the bearing of such exclusion, on the influence exerted by literary marriage on marital felicity as a factor in longevity, if the suicide happened to have been driven to his deed by his wife's conduct, as was the case with one. On the other hand, an exclusion of the instance where husband and wife died the same day, by counting it in a neutral column, would exclude one figure counterbalancing the latter as to their bearing, inasmuch as the husband committed suicide in consequence of his wife's death, he having lived an exceptionally happy married life, and become inseparably attached to her (Otto V. Reinsberg, husband of Ida V. Duhringsfeld; the couple had been married thirty-one years).

By no means do these revelations and a study of their bearing militate against statistical studies in general. Indeed, it was from what was at first a mere crude statistical accumulation that such considerations as those just hinted at naturally developed. I mean merely to animadvert on the unreliability of statistics whose compiler does not bear in mind what I once before saw occasion to lay stress on,[1] that when two persons do the same act, it is not the same act as weighed in the scales which it is made to appear in the statistical columns. It is not always the same act intrinsically, and hence does not have the same significance. As in the instance just given, apparently uniform acts, such as two suicides, both referable to connubiality, may have antithetical motives, and instead of being in cumulative confirmation, contradict and neutralize each other.

As the source of these figures was as named, it might be objected that they were collected under a bias, since they were derived from

[1] In a review on Morselli's excellent work on suicide: *American Journal of Neurology and Psychiatry.*

tables devoted to the suicidal and insane classes. Without defending them by adducing the circumstance that in every case counterbalancing tables existed, I resolved to compile another set from a source which would exclude any possibility of invidious discrimination, namely, from the biographical cyclopedias of three nations. I allow the above figures to stand because they have a value to me, and may possess such to the reader, inasmuch as they were collected before any opinion or even surmise had been formed on the subject.

Out of three hundred and eighty-two cases of female poets, essayists, and journalists, including a few of what may be called *belles esprits*, two hundred and eighty were found to have been married and to have sufficient data existing relative to them to be useful for the present inquiry. Of these, sixty-one married a second time, three a third time, and one a fourth time, so that there was a total of three hundred and forty-five husbands to two hundred and eighty wives. Of this number two hundred and thirteen were not divorced from their first husbands, and of these one hundred and seventy-five survived their partners.

Of the undivorced one hundred and seventy-five who had survived their husbands, from whom they had not been divorced, one hundred and fifty-eight had no divorce either from the husband in question or from a later one. In all thirty-eight husbands survived wives married under these circumstances. In other words, the surviving widows bear a proportion to the surviving males, even limiting the figures to those who had had no divorce to their credit, of one hundred to twenty-six; the ordinary ratio in the population of widows to widowers being about two to one. The greatest discrepancy I can find approaching this obtained in the case of non-literati is in the statistics of Prussia for 1880, where it is a ratio of one hundred to thirty-six. This shows still an enormous discrepancy in disfavor of the husbands of literary women. I should, however, in order to make a fair comparison, have allowed the figure of those who had been divorced from their second husbands to stay in the column of survivors of their first husbands, and in that case the ratio would be one hundred to twenty-one.

It is not alone in the number of survivors, but in the length of survivorship, that the husbands of literary women compare unfavorably with their fellows in ordinary wedlock. The remarkable fact, moreover, develops that in thirty-five instances out of the thirty-eight where the occupation of the husband was recorded, seventeen had been writers themselves, four artists and composers, and the

others divided among professional and mercantile occupations; one being a nobleman. The proportion of literary husbands among the survivors is as forty-five and seven-tenths to a hundred, whereas among those survived by their partners it is as five and five-tenths to a hundred. The conclusion would seem to follow that whatever elements might exist in the nature of a marital union with a literary female are counteracted and neutralized to a large extent by the possession by the male of the same qualities, in so far as they are involved in the same profession.

The figures, showing the disparity as they do, really do not show its magnitude, for of the females survived no less than seven died in their first confinement. Now, a mortality of seven females out of one hundred and seventy-five (in the narrower sense a mortality of seven out of thirty-eight) is not paralleled in any other class of the female population. It tends to show that the literary female is defective physiologically in those requirements which make her a mother, as that she is unbalanced in those which would make her a wife, as shown by the column of male mortality.

If, in consonance with the principles previously expressed, an analysis of the individual cases be made, it will be found that the mortality of husbands must not be attributed exclusively to causes intrinsically on the male side. That longevity is affected by moral happiness and favorable social surroundings, only those can doubt whose ideas of life are limited to an observation of what can be weighed and measured, and it is these factors which are defective in most such marriages.

When we find in the same tables that no less than seventy-five of the three hundred and eighty-two females—and that means seventy-five of two hundred and ninety with accessible records—had been divorced, or otherwise separated from their husbands without the formality of a divorce, and that so large a proportion of these repeated this performance that no less than eighty-two husbands figure in the divorces from seventy-five wives, we naturally come to the conclusion that in the romantic search for affinities the *bas-bleu* like the woman of the "twentieth century" seem to have been rarely successful.

Another fact in the literary biographies (which it is needless to mention are often autobiographies) is sometimes plainly stated and illustrated. Thus of the six female suicides included in the series, one distinctly performed the act because she had not found her affinity in her husband, although she could allege no formal complaint against him. That the alternative of suicide was adopted by four of the husbands under like circumstances need not surprise us.

Lest it be supposed that an exaggerated view of the possibilities of life and a romantic conception of the unattainable were the sole cause of the conflicts and bickerings, which are easily imagined, if not always detailed (as they are with considerable satisfaction on the female part in a few of the biographies), we find the tendency which manifests itself in conduct leading to divorce and separation so intensely engrafted in those who adopted the literary profession that it has become in a measure hereditary. This was the case with the celebrated George Sand, whose separation and divorce from her husband were faithfully reproduced in the history of her daughter. But there is a still more remarkable case. The female poet Karshin had been divorced from two husbands — from one because he could not appreciate her sentimental nature, and from the other because he was too vulgar for the peasant girl, she being the daughter of a peasant. Her daughter Klencke was divorced from two husbands, and her granddaughter, the Baroness Chezy, was divorced from exactly the same number. Three generations repeating in ridiculous detail the same feature! In this case we can see behind the scenes, because the biography of the fourth generation throws a different light upon the home life from that given in the flowery description of the biography of the third generation. The third female mentioned had a son whose biography occurs in the same columns. The brief yet pathetic statement reads: "Owing to the restlessness and fussing tendency of his mother he never succeeded in obtaining any uniform training or any continuous consistent education."[1]

I do not wish to be understood as attributing any of the imputed qualities in the cases referred to to perversion of the erotic kind in the unfavorable sense of the term. I am aware that there is a cynical view entertained in that direction; but it is as ill-founded as some other superstitions, if I may call them such, that prevail on the subject of female sexuality. Quite contrary to such a presumption, I am inclined to believe that, if anything, the class I am speaking of are more negative in this respect than the average healthy females; even these, as experienced gynecologists will confirm, are frigid in a much larger proportion than is ordinarily believed.[2]

The more important deductions to be drawn from these facts I

[1] Lexikon der Deutschen Dichter und Prosaisten. Brümmer.

[2] In the sequel I shall have occasion to refer more in detail to the researches of a distinguished gynecologist, conducted on the inmates of an insane asylum as well as on females mentally sound, from which it becomes apparent that this frigidity has been increased by culture, being greater in the affluent, not to call them the higher orders of society, than in the humbler walks of life.

trust to make apparent in a later article of the series. For the present I merely wish to direct attention to the fact that (1) the marriages between literary females and non-literary males contrast unfavorably with those where both members of the couple are literary, and that this exhibits itself in an earlier mortality of the male partner; and (2) that the literary female is physiologically less adequate to the duties of a wife and mother than the average woman.[1]

[1] I have not been able to obtain accurate details of a sufficiently large number of these married literary females to speak very positively on the question of sterility. That this is larger than in the ordinary population is, however, shown by the figures already obtained, and renders the large percentage of deatbs in the first childbed all the more significant.

BOOK REVIEWS.

A Text-book of Practical Medicine. By W. G. Thompson, M.D. New York and Philadelphia: Lea Brothers & Co. 1900.

This is a new work on practice of 1011 pages, illustrated by 79 engravings. It has been handsomely issued by the publishers. The author in his preface says that the advent of a new century makes proper a comprehensive review of the present status of medical practice. His effort has been to set forth clearly and simply those facts and principles which have received clinical proof, and to avoid those theories which have only a speculative basis. Curative medicine is assumed to be the final and avowed object of those who read the volume; hence the writer has devoted special attention to the therapeutic sections.

The work is divided into nine parts: The first deals with the infectious diseases; the second with diseases of the digestive system; the third with diseases of the spleen and lymphatic system and the ductless glands; fourth, the diseases of the blood and vascular system; fifth, diseases of the respiratory system; sixth, diseases of the urinary system; seventh, diseases of the nervous system; eighth, diseases of the muscular system; and ninth, miscellaneous diseases, poisons and drug habits, and diseases due to parasites.

In speaking of typhoid fever, the cycle of contagion is said to be from human evacuations to drinking-water and back to the small intestine. Such a statement does not recognize personal contagion and flies, which are shown by Vaughan to have been such important factors in the development of typhoid fever during the war with Spain. The Widal test is said to be of great value, but it is recognized that it fails in about three per cent of the cases. The diazo-reaction is described, but it is said to have been largely superseded by the Widal test. This is perhaps true, but it is an unfortunate change, as the diazo-reaction is valuable from a prognostic as well as a diagnostic standpoint, and it is a test which is easily applied and may be used several times a day. In the treatment of typhoid fever cold baths are accorded the first place. In its dietetic management a strict milk diet is enjoined. The bacillus icteroides is said to be the cause of yellow fever, which indorses Sanarelli's views. Pfeifer's bacillus is said to be the cause of influenza. The chapter dealing with this infection is one of the best that is to be found in any systematic treatise on medicine which has appeared lately. The bubonic plague is hardly considered with the fulness to which the very late developments of this disease entitle it. The value of the Haffkine prophylactic is maintained. Four varieties of dysentery are described—the catarrhal, amebic, diphtheritic, and chronic. There is no reference to the specific bacillus which is said to cause certain tropical dysenteries, but as this question is still *sub judice*, perhaps it comes under the author's exclusion of matters which are purely controversial.

The management of smallpox is said to consist of prophylactic vaccination; the treatment after the affection has developed is purely symptomatic. In scarlatina there is no reference to Class's work in isolating the germ of this disease. Ninety per cent of the cases of pneumonia are said to be caused by the micrococcus lanceolatus. In its treatment the writer uses ice-bags, but

admits that neither heat nor cold has any influence upon the circulation in the lung. In pneumonia the Brand system of bathing is said to be positively harmful, and it is especially so in that form of pneumonia complicating typhoid fever. Diphtheria antitoxin should be used in every case of diphtheria as soon as it is seen. One of the longest chapters dealing with infectious disorders is that devoted to tuberculosis. In it we have a description of the infection as it occurs in different organs, and the writer closes this portion of the work with a description of tuberculosis in the absence of distinct signs or of its localization in certain organs.

In dealing with the vexed subject of rheumatism the writer says: "The word as now used is vaguely applied to several conditions which nevertheless possess three common features: (*a*) Constitutional, toxic, or febrile symptoms; (*b*) inflammatory localizations in the joint, and often also in the muscles and skin; (*c*) visceral inflammatory complications in the heart, serous membranes, and sometimes in the tonsils. Such popular nomenclature as gouty rheumatism, rheumatic gout, rheumatoid arthritis, and gonorrheal rheumatism is misleading by suggesting relationships which do not exist. Whether they have a common antecedent diathesis or not, gout, rheumatism, and arthritis deformans are absolutely distinct diseases, and the so-called gonorrheal rheumatism is a specific septicemia having no connection with rheumatism whatsoever." In describing the accepted forms of true rheumatism the author places them under three heads: (1) acute articular rheumatism; (2) chronic articular rheumatism; (3) muscular rheumatism or myalgia. In the treatment of tetanus the antitoxin serum is recommended, but no mention is found of the use of carbolic acid, which has an even better record from a statistical standpoint. Its value in anthrax has been so often shown that in the somewhat similar infection, tetanus, it is fair to suppose that it might be useful.

That portion of the work dealing with the constitutional diseases, the circulatory and glandular apparatus, and the blood, is quite up to date. There is an extensive description of diseases of the nervous and urinary systems. Arthritis deformans is placed under the division of nervous troubles among the trophic and vasomotor disorders.

A Manual of Personal Hygiene. Edited by Walter M. Pyle, A.M., M.D. Price, $1.50. Philadelphia: W. B. Saunders & Co. 1900.

This work is the joint product of the editor and six collaborators. We are told in the preface that it is the object of this manual to set forth plainly the best means of developing and maintaining physical and mental vigor. There is a concise and adequate discussion of the anatomy and physiology of the parts under consideration. An effort has been made to apply the teaching of physiology to proper living. Purely technical language has been omitted.

C. G. Stockton discusses the hygiene of the digestive apparatus. The mechanism of digestion and absorption is described. There is a description of the teeth and the deformities of the jaws, with directions for the preservation of the teeth. There are some valuable things said upon diet. Exercise and the relation of dress, particularly the wearing of the corset, come in for some severe strictures in their relations to the digestive organs.

G. H. Fox has a chapter dealing with the skin and its appendages. The cold bath is extolled as a stimulant to the skin; it is spoken of as a tonic. There is an excellent discussion of the relation of clothing to the skin, and the

deformity resulting from improper shoes comes in for a good scoring. The care of the hair and scalp is extensively discussed, in which massage of the scalp and shampooing are strongly advocated. The use of hair tonics and hair restorers is stated to be quite useless.

E. F. Ingals has prepared the chapter on the hygiene of the vocal and respiratory apparatus. There is first the usual description of the anatomy, and then follows a brief practical discussion of obstruction to the nasal passages and mouth-breathing. The evil effects, together with the symptoms of adenoid growths, are spoken of in a practical way. There are some excellent statements regarding the development of the voice and its proper use, particularly in singing. Shoulder braces, tubercular immunity, exercise, and climate, are some of the things which are discussed in the care of the lungs.

B. A. Randall discusses the ear and its hygiene. For the most part this chapter will be found too deep for the average layman, but the remarks on earache will repay its perusal.

W. L. Pyle gives the hygiene of the eye, beginning with a description of the changes of binocular vision. There is a description of the ophthalmoscope with diagrams to represent the "blind spot," and a few other things that might have been wisely omitted as being of comparatively little value to the laity. The practical part deals with the general care of the eyes of children, together with a description of the proper method of lighting schoolrooms and the relation of desks and books to the eyes. There is a discussion of the relation of eye-strain to headaches, and directions on the proper wearing of glasses.

J. W. Courtney discusses the hygiene of the brain and nervous system. This chapter naturally begins with the influence of heredity and educational environments. The author is of the opinion that the so-called degenerate is not altogether the product of heredity, of which his deformed ears and asymmetrical skull are so indicative, but that his education and environments are most important factors in shaping his career. There are excellent chapters on worry, overwork, neurasthenia, alcohol, rest, and exercise. A conclusion in which we heartily concur, and on which we have written, is that "golf is one of the greatest boons in the way of outdoor exercise yet offered to the nervously weak of both sexes."

G. N. Stewart closes the work with a short chapter upon the physiology of muscular movement. This includes exercise and muscular training. On the whole, the work is an excellent contribution to hygiene, and it is all the more valuable from the fact that there is no attempt made in its pages to make every man his own physician; but such simple practical rules are laid down as are useful in maintaining the health of the body.

PRACTICAL URINE ANALYSIS AND URINARY DIAGNOSIS. By Charles W. Purdy, LL.D., M.D. Fifth Edition, Revised and Enlarged. Price, $3.00. Philadelphia, New York, and Chicago: The F. A. Davis Co.

The last edition of Purdy's work shows a careful revision, and there is much new matter, including a chapter on the microscope and its use in urinary analysis. In this last edition we have a complete exposition of the author's method of centrifugal analysis, which he justly claims has now been elevated to the position of an exact scientific process. By means of it albumin, chlorine, phosphoric and sulphuric acids in the urine, are quickly and accurately ascertained. The chemical department of the work has been carefully revised, and that part relating to the testing for albumin has been rewritten.

In discussing albuminuria, the author says a small amount of albumin is not incompatible with health, but may at the same time be an indication of change in the structure of the kidney. Albuminuria may be due to (1) changes in the kidneys themselves; (2) alterations in the quality of the blood which render its serum albumin more diffusible; and (3) alterations in the degree of blood-pressure. The degree and gravity of the change in the kidney cannot always be estimated by the amount of albumin, excepting where this substance is present in the proportion of one per cent by weight.

Cyclic albuminuria and the albuminuria of adolescence are attributed to some departure from the general health in which there is an increased blood-pressure, a change in the albumin of the blood, or a slight alteration in the renal structure. Albuminuria is a symptom of variable significance and is never by itself to be taken as a symptom indicating renal disease. At the same time, albumin in notable quantities is not present in healthy urine. Albuminuria should be regarded as an existing abnormal state, the gravity of which must be determined by its accompanying symptoms. The author holds that the so-called functional albuminuria forms no exception to the above rule, as he has never met with a case in which there was not evidence of a departure from perfect health, either general or local.

In testing for albumin, the author recommends a combination of acetic acid with sodium chloride as preferable to all others. He claims that this distinguishes minute quantities of albumin from other proteids in the urine. The test is made as follows: The urine, previously filtered, is poured into a test-tube and about one-sixth of its volume of a saturated aqueous solution of sodium chloride added. The mixture is acidulated with from five to ten drops of acetic acid, and the upper portion boiled for one-half minute. If a cloudiness appears, albumin is present.

The section on microscopic examination of urinary sediments is a marked addition to the work. The illustrations of this section would have been much improved by the addition of colored plates.

Atlas and Epitome of Diseases Caused by Accidents. By Dr. Ed. Golebiewski. Authorized Translation from the German. With Editorial Notes and Additions by Pearce Bailey, M.D. Price, $4.00. Philadelphia: W. B. Saunders & Co.

The first portion of the work is devoted to a general consideration of accidents, statistics, mortality, and general remarks on injuries and traumatic disorders. Then follows a brief description of injuries of the various tissues, such as skin, muscles, tendons, nerves, bones, and joints. These general considerations occupy 88 pages of the work; the remaining 458 pages are taken up with a description of the injuries and traumatic diseases of special parts. They are included under the head of trunk, chest, abdomen, upper and lower extremities. The work, taken as a whole, is a very striking contribution to the literature of traumatic injuries. Not only have we an extensive number of cases, but we have them beautifully illustrated, carefully described, and withal the text is written in a judicial, painstaking manner.

EDITORIAL COMMENT.

THE COST OF A DIRTY CITY.

Chicago has the unenviable distinction of being one of the dirtiest if not the dirtiest city in the United States. For first rank in this respect Pittsburg and Allegheny long led, but the use of natural gas has eliminated so much soot from their atmosphere that they are comparatively clean. The soft coal burned in Chicago has contributed not a little to the fouling of the atmosphere, but of late years this nuisance has been somewhat abated, and now the chief pollution of its atmosphere is due to the pulverized and desiccated horse droppings that float continually above and about the heads of its citizens. A fairly long residence in this city would lead one to think that these sanitary evils had increased. We cannot but think that this is in part due to the enormous extension of the city limits, without any corresponding material increase in the population. The spirit of annexation had nothing behind it more than the sentimental reason that it was desirable to increase the population to equal, if not surpass, the large eastern cities. The effect of this was to throw one metropolis of the east into such a spasm of apprehension that it immediately organized itself into a "greater" city, but it is not believed a better one. In this wild spirit of annexation Chicago succeeded in burdening herself with the government of numerous cabbage patches, cow pastures, and cornfields, which add pleasing diversity to the city, but furnish a comparatively insignificant amount to the taxable realty.

The lay press is filled with complaints of the dirt and criticisms of the tax levies, and comparisons not favorable to local pride are made between conditions which prevail in some foreign cities, notably Paris. It is pointed out that Paris is well paved, well lighted, and its streets are washed every day. A simple calculation would show what a sum would be required to apply this to an immense area such as Chicago now covers. It would result in an increase in the tax levy to a point where it would mean a substantial confiscation of property.

To those who have had practical experience of life in a dirty city, we need address no words on its discomfort, but it was only lately that our attention was attracted to an editorial in the *Chicago Record* in which the monetary value of a clean city is set forth.

"If it were possible to figure up the total amounts that Chicago has to pay for furniture, hangings, curtains, wall-paper, and clothing ruined by the unnecessary dust and smoke of the city; if to this sum were added the excess cost of laundry work caused by the same plagues; and if, finally, the increased fees of surgeons, physicians, oculists, and opticians could be carried into the grand total, the people of this city would be appalled at the wastefulness that permits the existence of two such nuisances. It is probable that every street could be paved with the best asphalt, watered twice a day, and swept clean whenever any dirt accumulated, for one-quarter of the above mentioned waste, and that every furnace in the city could be equipped with a practical smoke-consuming attachment and fed with the best quality of smokeless coal for another quarter of the same amount. From a strictly economic point of view there is no doubt that it would put money in our pockets to keep the city clean. When the moral effect of a dirty metropolis is considered, the importance of reforming the condition of our streets and chimneys becomes even more apparent. It is held by many shrewd observers of humanity that no person whose body is always dirty can live a very clean life morally. While this may be an exaggeration, it is practically certain that no one who is unable to secure a moderate degree of cleanliness in one's home can hope for much comfort. When we find that dirt costs us money and an easy conscience, the price we pay for it seems really too high."

At the recent meeting of the Boston Society for Medical Improvement, Clifford Richardson, Esq., read a very interesting paper on city pavements. He came to the conclusion that the asphalt pavement was the best for cities, being clean, durable, and easily repaired. While its first cost is considerably greater than that of other pavements, it has certain advantages which, in the long run, make up the difference. He gives some exceedingly interesting data. One of the most interesting items, that relating to the economic aspects of the question, he quotes from the *Philadelphia North American*, an article saying the change from cobblestone to asphalt in Philadelphia was estimated to effect a saving of $100,000,000 annually in the cost of maintaining vehicles. A table is given in which the death-rate of a number of cities is compared, those having the clean and the best paved streets invariably showing a low death-rate.

In this same discussion was an excellent article on the relation of drying upon various pathogenic bacteria, the conclusion being that there was comparatively little danger of disease being produced

by bacteria-laden dust, but that the local effects of dust upon the lungs and upper respiratory tract were very deleterious.

Macadamized streets came in for unqualified condemnation. This seems to be the prevailing pavement in Boston, and is evidently believed to be about the worst that can be devised for streets with a heavy traffic.

The problems which confront Chicago and many other large American cities from the public health standpoint are very great, but nothing is to be gained from the statement of half-truths and shutting the eyes of the people to exact facts. Public health sanitation is summed up in the one word cleanliness, and public improvements should include the elimination of rotten wood in the form of sidewalks and pavement, with all their possibility for harboring vermin, and the substitution of smooth, hard surfaces which can readily be kept clean. The instances we have cited show conclusively that public improvements of this character are ultimately economical, even if we leave out the consideration of their healthfulness. There is no means of estimating the actual cost to the community of breathing a dust-laden atmosphere, but the amount must be very great.

PHOTOTHERAPY.

More than three years have elapsed since Finsen published his first report on the treatment of lupus by concentrated light. This was at first received with incredulity by the scientific world, but at the present time it may be said to have won an established position in therapeutics. It has not been used in this country, so far as we are aware, up to the present time, but this is due in part to the expense and complicated apparatus required. Two installations have already been made in London. We have always felt that one of the most fascinating fields of therapeutics was in the treatment of external visible disease. Here applications can be accurately studied in the alteration of structures which they produce. Instead of this proving an attractive field, it has been to some extent the reverse, and a perusal of therapeutic literature shows that the more obscure and of necessity the more inaccurate the diagnosis, the more enthusiastic the therapeutics. That the chapter on tuberculosis of the skin and lupus has been rather unsatisfactory from the standpoint of treatment no one will deny.

For many years caustics have been employed in the treatment of lupus with varying results; some cures were effected, but in the

majority of cases only a certain degree of improvement was had. Later, the sharp spoon was recommended for curetting away the infiltrated tissue, but this proved far from satisfactory, and the French writers have never adopted it, claiming that any treatment which involved hemorrhage and the opening of uninfected areas but furnished a new nidus for the disease with its consequent extension.

Holaender's hot-air treatment marked a distinct advance in the treatment of lupus, as by it the tissues were deeply destroyed without the possibility of an extension of the infection. Unfortunately, the hot-air cauterization had some distinct disadvantages; it is very painful, an anesthetic being required, and the deep destruction of the tissues is followed by extensive edema and a marked inflammatory reaction.

Finsen's treatment by concentrated light waves, while admittedly efficient, is free from these defects. The apparatus consists of an arc light surrounded by a shade. From this lamp four telescopes radiate, each conveying the light to one patient. Each telescope contains lenses composed of quartz, this substance having less obstructive effect on the actinic rays than any other medium. The space between the constituent lenses of the telescope is filled with water to moderate the temperature. By means of the telescope the rays are concentrated upon a lens held in the hand of the nurse. The lens is composed of two plates of quartz or glass, the space between them being filled with water, which may be connected with a supply so that the lens is kept constantly cool. This lens is pressed by the nurse firmly upon the part undergoing treatment. This pressure is thought to be quite essential, as in this way the parts are rendered anemic; comparatively bloodless structures are found to favor the treatment. The active rays are found in the violet portion of the spectrum, and when the lens is accurately focused there is a bright center surrounded by a red ring about three-fourths inch in diameter. Each application of the light lasts about one hour. Care must be taken to protect the eyes and the uninfected parts of the patient's skin. The application is quite painless, and similar results to the arc lamp have been obtained by Finsen in focusing the direct rays of the sun, though the latter can be much less constantly employed than the arc light. The treatment is followed by a slight reaction, in which the part becomes slightly swollen and somewhat red, but there is rarely any pain. As a rule, the greater the reaction, the better the result. The area that can be treated at one time is comparatively small, and if the amount of inflammation is extensive, the treatment must extend

over a long time. The results are often remarkable, the skin regaining its normal flexibility, and the scar tissue which remains is scarcely noticeable. There is danger at the present time that the advantages of the method will be exaggerated. In order to make the light rays effective, they must be focused at right angles to the surface. It will be seen therefore that many cases will present special difficulties; the situation will be such that the light rays cannot be brought to bear effectively. Patients who have been treated by other methods in which there was an extensive formation of scar tissue are quite refractory to the treatment. Pigmentation, which occurs after numerous sittings, limits somewhat the effect of the light treatment, and the "reaction" which occurs in the early applications tends to diminish. In other words, the effect of the early treatments is much better than the later applications. Absolute cures are not uncommon; more than sixty have been reported by Finsen in which perfect recovery had taken place.

A WONDERFUL DISCOVERY.

Now and then we are treated to an article on an epoch-making discovery, and it has always been our custom to refer to these editorially. W. C. Moor (*Medical Record*, Sept. 1, 1900) has recently discovered the principal organic constituent of urine, which he has named "ureine." This substance he believes to be the true cause of uremia. He began his discoveries about a year ago, when he was led to the study of an easily oxidizable substance in the urine which gave a characteristic blue reaction with a solution of ferrocyanide of potassium and ferric chloride. To his great astonishment human urine contained an organic substance which gave this reaction. For three months he labored in vain to isolate this mysterious body, when on the 5th of July, one day after the anniversary of the Declaration of Independence, he discovered that the human urine contained an organic body in a quantity superior to urea. This remarkable discovery ought certainly to entitle him to rank with the discoverers of argon, but it is to be remembered that argon exists in very small quantity in the atmosphere, while that substance which was discovered by Dr. Moor exists in the urine in larger quantities than urea—namely, from two to three per cent. Perhaps a substance which exists in such large quantity ought not to offer so great credit to the discoverer, as in stumbling upon it, as all discoverers must, one can only be astonished by the fact that some other discoverer had not previously broken his leg over the same stumbling-block.

The writer is not surprised that it has not been discovered, as he says "every urinary analysis has been made with the firmly rooted idea that urine is a liquid composed of water and of inorganic solid ingredients." If every analysis of urine that has ever been made has been undertaken with the firm conviction that the urine only contains inorganic solids and water, then indeed we have been singularly blind to the fact that when the inorganic solids have been precipitated there still remained a fluid of specific gravity greater than water; also to the fact that when the organic constituents are driven off by heat, there is something of a loss in the solid constituents.

We are told that "in isolating this organic liquid, high temperatures must be avoided and chemicals are to be used as little as possible." We shall not follow the writer through the intricate chemical equations and processes which he uses to illustrate the manner in which this substance is separated from the urine. He leaves us somewhat in doubt, as he fails to say whether or not it is found in normal urine. The instances which he gives relate to those who presumably might be suffering from some abnormality in this excretion. He says the greatest amount of substance is voided between 5 and 7 P.M., and so far he has found it present in a quantity double that of urea. In one diabetic woman he found six per cent of ureine and only 2.1 per cent of urea. Among the properties of "ureine" are mentioned the fact that to it the peculiar odor of urine is due. "Rubbed into the skin, it soon produces a sensation of slight burning; there can be no doubt that it is the principal cause of the irritating qualities of urine." Ureine resembles olive oil, being of a pale yellow color, of a slightly bitter taste, and of an oily consistence. On paper it produces spots similar to fat. Its specific gravity is 1.270. It is freely soluble in water and alcohol, but feebly so in ether. The reaction is slightly alkaline. The author closes with the hope, in which we join, that "this wonderful organic fluid deserves the closest attention and study, and I hope that my feeble efforts will give some impulse toward detailed researches which may in the near future bring us to a full understanding of ureine and of its significance in relation to the science of medicine."

The paper was read before the Thirteenth International Medical Congress, and seems to have been written from Rome. Perhaps the two urines from which this remarkable substance was obtained had some peculiar abnormal constituents derived from the Italian climate. We are confident that urines of the Western hemisphere that con-

tain an organic body other than urea of a specific gravity of 1.270, in the proportion of two to six per cent of the total volume, must be exceedingly rare.

THE ASSASSINATION OF KING HUMBERT.

This last tragedy of the "International" has received considerable comment from the medical press. The editor of the *Philadelphia Medical Journal* sees in this tragedy a disease of the body politic, a symptom of a malign social disorder. To him it indicates a wide-spread moral and intellectual degeneracy, which is already too conspicuous in the present era.

The Lancet, in discussing the matter, says that of late Italy has achieved preeminence in the manufacture of such criminals; she is the source from which anarchy draws its most numerous, its most reckless, its most effective agents, whose deeds of blood have within the last four or five years been visited upon Frenchman, Spaniard, and Austrian alike—on victims unknown to their murderers, who have become the willing tools of conspirators. The writer significantly calls attention to some of the social and educational conditions which prevail in Italy. Nearly one-half of the population cannot read and write; this forms a class which is peculiarly responsive to the agitator. The latter is a product of Italy's bad academic and educational system, which multiplies the agitator at the expense of the artisan, the tradesman, and the husbandman. Baccelli has pointed out the disastrous effects caused by the granting of degrees after the most superficial examinations. There are more than thirty seats of learning which have the degree-conferring power. In consequence the country is inundated with unemployed professional men who disdain the prosaic life of the industrial bread-winner, and find on the platform and through the press the channels through which their personality can make itself felt. These constitute an "academic proletariat" which in Baccelli's significant phrase is the rank, unwholesome growth which is overrunning public life. Nearly five hundred lawyers, five hundred physicians, and five hundred engineers in excess of the number that can make a modest livelihood are added to the professions every year. From this class is recruited the political organ in Italy.

In addition to these educational defects, the economic conditions of Italy are such that life at best is reduced to the hardest kind of struggle for existence with the majority of the inhabitants. This creates a favorable soil for the political agitator. These conditions

have to a considerable extent been recognized by the Italians, who have organized societies and held congresses for the purpose of suppressing crime and anarchy. These have, however, been addressed to symptoms; the real needs of Italy are economic, educational, and sanitary reforms.

There is much in what Baccelli says that is applicable to the conditions in this country. Notwithstanding our efforts to raise professional education, the tide of students shows little diminution. The requirements for admission and graduation in our leading medical schools have been more than doubled in the last decade, but this very increase in the requirements of the leading institutions has created a demand for colleges in which the requirements are much less. This demand has been generously met, and we feel safe in saying that some sort of a degree can be obtained which will admit to practice in States where no examination is held with as little effort as was the case twenty years ago. Again, it is doubtful if the State examination has proved all that was hoped for it. In too many instances examining boards have been appointed for political considerations, and we are not quite sure that political pulls may not occasionally secure favorable action upon poor showing in the examination.

The experience which this country has had with strikes, anarchy, and other forms of a socialistic propaganda is anything but reassuring, and we are not positive that we are not accumulating an "academic proletariat" which will be found very busy when business depression or other economic conditions furnish a suitable opportunity for the exercise of its peculiar activity.

THE ARMY MEDICAL SERVICE IN SOUTH AFRICA.

There is a striking parallel in the criticism leveled at the South African military medical service and that which was made at the close of the Spanish-American war. The first knowledge of the suffering of the sick and wounded was conveyed to the British in a letter published in the *Times* of June 27, from Mr. Burdette Coutts. The letters of Mr. Coutts were published shortly after the return of Sir William MacCormac and Mr. Treves, when the country was just congratulating itself on the excellent provision which had been made for the sick and wounded in this campaign, and they were rudely awakened by the truthful details contained in the communication of Mr. Coutts. The latter charged directly that there was a lack of foresight in the provision for the sick, and his letters

have excited so much comment that a commission has been appointed to inquire into their accuracy. The charges are not general in character; it is stated that on Saturday, April 28, in a field hospital at Bloemfontein, hundreds of men in the worst stages of typhoid fever were lying on the ground with nothing but a blanket and rubber sheet. There were no stretchers, beds, mattresses, pillows, or linen of any kind; only three physicians to attend to 350 patients, and no nurses. Some weeks later there were 496 patients in this hospital, 300 of whom had typhoid fever, the medical staff remaining the same, namely, three physicians and twenty-five untrained privates. The publication of these letters led to a discussion in the House of Commons, in which the truth contained in them was substantially admitted, but it was claimed that the results were inevitable because in the advance on Bloemfontein the army had been so far removed from its base of supplies and transportation was so precarious that medical supplies could not be brought up. The general truth of this defense is admitted, but no mention is made of the glaring deficiencies that have existed in the British Army Medical Corps for many years. The policy has been so parsimonious toward this branch of the service that its numbers have been kept below that necessary for a peace footing, to say nothing of making adequate provision for a war as extensive as that which has been carried on in South Africa.

The war in Africa has emphasized some of the lessons to be drawn from the medical history of the Spanish-American war, namely, that surgeons are not so much needed in the conduct of a campaign as are physicians and sanitarians. At the breaking out of the South African war, Sir Walter Foster pointed out that there would be a great loss of life from fevers during the campaign, and offered his services without charge to the government. This was declined, but subsequently three leading English operating surgeons were appointed by the government at salaries of $25,000 a year. The value of these is a matter of conjecture, with the hospital conditions that prevailed at the front.

Our own army medical corps is probably not more if it is as efficient as that of the British army. Upon a peace footing contract surgeons are a necessity. Steps should at once be taken to reorganize a medical service upon an adequate basis. Numerically, it should at least be sufficient to place at least one trained medical officer with every two thousand troops, whether volunteer or regular, that we are likely to place in the field. The wars of the near future are likely to be fought in tropical countries in which

tropical and infectious diseases prevail. A thorough knowledge on the part of such medical officers of internal medicine and of the infectious diseases is therefore requisite, and is probably of much greater importance from the standpoint of health and the saving of human life than is mere operative technique. The two last campaigns show that the same rule holds now as in previous wars, that deaths from disease are three or four times more frequent than those from wounds and injuries. Dealing with typhoid fever is now the great problem that confronts the medical director of a campaign.

SHIRT-WAISTS FOR MEN.

Chicago has recently been in the throes of a sartorial revolution. In the early part of August there prevailed an unusually high temperature. For nearly ten days the thermometer was rarely below 90°, and the aggregate of suffering was very great. During this period nearly fifty deaths due to heat exhaustion and nearly 300 severe prostrations were reported to the health department; the death-rate was relatively very high. In the midst of the heated spell a gentleman appeared at one of our leading restaurants attired in what he called a "shirt-waist." He was politely but firmly told by the waiter that he could not eat in that particular restaurant unless he wore a coat. The man expostulated and called attention to the fact that he was really not in his shirt-sleeves, but was attired in the conventional garment known as a shirt-waist, which had been worn by women for many years in all places and on all occasions without criticism and without thought of its immodesty or impropriety. Notwithstanding this valid argument, the gentleman was incontinently excluded, being informed that he could dine in the grill-room, a place from which women are rigidly excluded.

We have given some thought to this matter, and we are unable to see the justice or fairness of the rule laid down by this hotel-keeper. Women have successively adopted various articles of masculine attire, including the uncomfortable standing collar, the neckties, jackets, and last, but not least, the peculiar foot-form shoe sometimes termed "bulldog." With the recognition on the part of men that the shirt-waist was a cool, peculiarly satisfactory form of dress for summer, it was but natural that they should make an attempt to secure so comfortable a garment. We are not sure that we understand the distinction between a shirt and a shirt-waist. The principal difference seems to be that the trousers are supported in some way from the waist without the aid of what are commonly

known as suspenders. We are also not positive that the masculine shirt-waists and the feminine style of the garment are absolutely identical. It is probable that the hotel and restaurant men felt that this was a subterfuge on the part of the masculine sex to really go about in their shirt-sleeves. There was an extensive discussion on the subject in the lay press, and numerous interviews were had with different hotel proprietors, the views expressed by them being most divergent, some stating that no shirt-waists upon men would be admitted to their places, while one claimed that he would not encourage men in the wearing of feminine attire, and for that reason would not admit them. One hotel proprietor seemed to us to exercise exceedingly good sense when he said that any man could dine in his place who was dressed decently and looked clean and neat.

During the heated term a very much larger number of men suffered from heat prostration than women. It is impossible to say how much of this is due to the greater exposure of men due to occupation and to an excessive amount of exercise during the heated term, and how much to clothing. That the latter, however, plays an important rôle we have no doubt. The proportion of men seen upon the street clothed in heavy woolen waistcoats and coats is extraordinary. Occasionally the waistcoat is omitted, and in a few other instances the woolen coat is replaced by one of thin material. Even the thinnest coat, however, is oppressive on a very hot day. It prevents that free circulation of air and rapid evaporation from the surface that would be provided by only a single garment. This is evidently met by the shirt-waist, and it is really an absurd dictum of fashion that requires a man to wear a coat at all times, regardless of the temperature. In tropical countries this rule was long since discarded, and even the stickler for fashion, the Englishman, there discards his coat and simply wears a light tennis flannel shirt and trousers. There is no reason why the health, and even life itself, should sometimes be sacrificed for a mere whim.

THE AUTOMOBILE IN COMMON PRACTICE.

The electric cars on the elevated and electric roads have done much for the transportation of the urban practitioner; they have almost made a horse unnecessary in his work. It was to be hoped that the automobile would do something to lessen the hours which the rural practitioner must spend in his wagon. That these hopes are not destined to early realization is evident from

a recent article by A. D. Hard in the *Medical News* of August 11, 1900. From the manner in which Dr. Hard writes it is evident that he is not only a physician, but is skilled in mechanics. He says of the three methods of propulsion of horseless carriages that have so far been devised—electricity, gasoline, and steam—the electric carriage comes nearest meeting the physician's requirements, but it is at present wholly out of reach of the country practitioner. The best of these vehicles will not travel over twenty miles without recharging. The great weight of these vehicles, with the constant destruction of their rubber tires, impairs their practical usefulness, even if the charging at frequent intervals could be provided for. On the paved city streets, where the trips are short and infrequent, with abundant facilities for recharging, the electric carriage is a success. It is free from danger, has no objectionable noises, odors, or appearance, and may be left for an indefinite length of time and be ready for use instantly.

The gasoline system, which early gave promise of great value in propelling horseless carriages, has been disappointing. The weight of the gasoline vehicle is about equal to the electric. Its machinery is complicated and easily deranged. It lacks starting power, it cannot climb the hills found on ordinary roads, and extreme cold weather interferes with its use. It gives off odors when in use, makes an objectionable noise, and cannot be depended upon to work when most needed. If stopped in a soft road, it is almost impossible to get the vehicle moving. Its advantage over the electric carriage is that it will run seventy-five miles without recharging. The cost of running is small, and there is no loss of energy when the machine is not in action. There is but little danger connected with its use, and it is easily run by the average individual.

The steam carriage is the one with which the writer has had the best results, but it is not likely to prove satisfactory to one who is not a skilled mechanic with a fair idea of engineering. It is as complicated as a railway locomotive, and demands constant care of a technical order. The boiler is constantly striving to destroy itself, steam must be made rapidly, but it is used up quite as rapidly by the double cylinders, and it is sometimes impossible to keep up a working head of power. Cold weather and wind sometimes interfere with the steam production. The proper supply of fuel, water, and steam requires unremitting attention, and the wearing parts must be frequently examined and oiled. The small water pipes freeze in winter; therefore it can be used only in mild weather or in summer. When in use the burner gives off bad odors, and

there is more or less of a cloud of steam about the vehicle. Its advantages over other power are that it weighs less than five hundred pounds and yet can easily climb 25 per cent grades. It has good starting ability, and strong, steady pull not dependent upon momentum. It develops speed rapidly, and is easily controlled.

The author thinks that there are good prospects of improvement along practical lines in the steam automobile, and that these will be reached in the near future. What is needed is a practical steam generator which will instantly convert small amounts of water into steam. In closing, he says that the country physician cannot successfully use any automobile now on the market to make regular trips over average roads at all times of the year, and any one who invests in a vehicle at this time will almost certainly be disappointed.

A DISTINCTION WITHOUT A DIFFERENCE.

The ridiculous controversy between the American Medical Association and the Medical Society of New York occasionally comes to the surface, although happily it is rarely heard of except on the floor of the General Association. The latest reference to it is found in Dr. Jacobi's address before the International Medical Congress, upon "Medicine and Medical Men in the United States." He refers to the advisability of consultations with irregulars, pointing out how hard it is to make a hard and fast rule which shall govern all cases, he evidently preferring it should be left to the judgment of a practitioner as to what constitutes an emergency calling for consultation and assistance. This was made the official policy of the Medical Society of the State of New York in 1882, after which followed one of the most acrimonious medical controversies of recent times. In the opinion of Dr. Jacobi, our successors will hardly believe we ever were serious men, when they learn that enlightened and public-spirited professional men could go to war over definitions and methods when the end in view was the same.

In emergency cases, consultations with irregulars are deemed permissible for reasons of humanity, by both sides of the controversy. One of them bases its action on a written code of ethics, and the other believes the written code to be unnecessary for its guidance. This seems to be the matter of controversy, and the exact issue, as is stated by Dr. Jacobi, is further supported by the *Journal of the American Medical Association*, which prints in connection with the article an extract from the code of ethics of the association. In this it is stated that the code of ethics is not to be interpreted as

excluding from professional fellowship on the ground of differences in doctrine or belief, and there is nothing in the code of ethics that interferes with the exercise of the most perfect liberty of individual opinion and practice. It merely holds that the assumption of a name indicating to the public a sectarian or exclusive basis of practice constitutes a withdrawal from the medical profession proper. Consultation with irregulars is itself enjoined wherever there is pressing need of professional services. This interminable controversy, which has dragged its weary way through a score of years, is found upon actual analysis to consist of a distinction without a difference, and it would seem that it were about time to drop the whole matter.

CASTOR OIL IN THE TREATMENT OF NEURALGIA.

The value of cathartics in the treatment of facial neuralgia has comparatively few references in the literature, but it is a method that is worthy of further trial. W. S. Caldwell (*Journal of the American Medical Association*, Aug. 11, 1900) calls attention to an article by Moyer in the April 21 issue of the same journal. Moyer reports about fifteen cases of neuralgia, but only seven of them had been under observation a sufficient length of time to enable him to speak definitely of the results of treatment. Five of these cases were neuralgia of the facial nerve, and two were typical cases of brachial neuralgia. In discussing the treatment Moyer was of the opinion that there was some peculiar property in castor oil other than its cathartic substance that made it so peculiarly useful in treating neuralgia. In the discussion Paddock said that castor oil had a distinct sedative action, even in cases where there were no bowel movements. Kiernan said that castor oil undoubtedly contained some substance which acts directly upon the nerves, the latter probably being ricin, or, as it is now called, phytalbumose. The latter substance has an action not unlike that of belladonna.

Caldwell, in his letter from Vienna, says that Professor Gussenbauer is given the credit of having first discovered the benefits which are often derived from the administration of cathartics in facial neuralgia. As far back as 1886 he had a patient upon whom he intended to operate. Before operating a large dose of castor oil was administered. On the following morning the patient was so much better that the operation was postponed and the cathartic continued, the patient making a recovery without the use of the knife.

The theory in Vienna is that the treatment eliminates certain toxic agents from the alimentary tract which are absorbed into the circulation and cause the disease. Gussenbauer aided this eliminative action by free warm water injections into the bowels, combined with cold applications to the abdomen. Breuer, first assistant in Nothnagel's clinic, says that he has not found castor oil better than other cathartic agents, and that he found purgatives, such as large doses of calomel, followed by one of the salines, efficacious. Whatever purgative is used, it must be sufficient to empty completely the alimentary tract.

A DIPLOMA MILL CLOSED.

Chicago has been cursed with one of the worst diploma mills that ever infested a community. Not only in this country but abroad was the Metropolitan Medical College a reproach to this city. Frequently those that were not acquainted with the difficulties surrounding the extermination of this pestiferous institution laid the blame for its retention to apathy or indifference on the part of the local profession or the health authorities. As a matter of fact the Board of Health has been engaged for many years in a more or less successful fight against this institution. In Illinois, a few years ago, it was very easy to incorporate an institution for educational purposes. An amendment was recently made to the incorporation act that a degree-granting institution could not be incorporated except after complying with certain special requirements. Before the law was amended the proprietors of the Metropolitan Medical College proceeded to incorporate some fifteen or twenty institutions, so that as soon as one, by the weary process of the law, which consumed about two years, was suppressed through the efforts of the State Board of Health, another was launched. All that was necessary was to change the wording on the stationery and on the diploma which was issued. The officers and "teachers" all remained the same.

Recently a flank movement on the part of the post-office authorities bids fair to suppress these institutions. The post-office officials readily lent their aid to stop the offenders using the mails. An inspector of the post-office service gained the evidence by applying for a diploma. He attended lectures for three days, and upon this evidence four alleged professors and twenty students were captured. The mail of the institution was held, and it has been ordered opened and any money contained in it returned to the people who sent it. The promoters of the institution are to answer in the federal courts

for using the mails with intention to defraud. The postal authorities are confident that this prosecution will result in suppressing this fraudulent institution and put an end to their obtaining money under false pretenses. If this last move is successful it will remove one of the worst blots upon the fair name of the city of Chicago.

EXCISION OF PRIMARY SYPHILITIC LESIONS.

Warrant could be found in the literature for the belief that the subsequent history of patients with specific lesion in which there has been an excision of the primary sore is more favorable than those cases in which such excision has not been made. Not long since Jonathan Hutchinson, than whom there is no more acute observer, stated his belief in the efficacy of such excision. The question is a very difficult one, owing to the impossibility of accurately diagnosticating an infecting sore. We believe that there is practical unanimity among syphilographers that there is no accurate diagnostic criterion of the primary lesion. The most that can be said is that there is a certain type of sore that is usually followed by a secondary infection. It can readily be seen why this is true, as we are dealing with an open ulcer in which there is secondary mixed infection which modifies the local appearance and which interferes with the evolution of the primary sore in cases due to a specific infection. It is therefore impossible to differentiate an infecting sore from a simple ulcer, its subsequent character being determined by the clinical history. With this class of diagnosis it will be seen how difficult it must be to arrive at a knowledge of the value of such a procedure as excision. Many writers have scouted the idea that it is of any service, maintaining that there is practically an instantaneous absorption of the virus, and that it is carried by the lymphatic system. Such a view is not in accord with what is definitely known regarding certain other infections; for example, tetanus is unquestionably modified by early excision or antiseptic treatment of the infection atrium. This disease also seems to be modified by the "dose" of the infection, which is administered by the primary sore. There may be some of the same relations of the development of the syphilitic infection. There certainly can be no harm in the excision of a primary sore, especially if it is so situated that its removal does not cause deformity, as by this means contagion is limited. Then we have substituted for the primary infected ulcer a wound through healthy tissue which may heal by first intention, and the possibility of the excision exercising a favorable influence upon the course of the subsequent infection.

ABSTRACTS.

MEDICINE.

The Clinical Aspects of Malaria.—

Patrick Manson, in the second of his lectures on the malarial parasite (*Lancet*, July 21, 1900), has some valuable suggestions on the clinical picture of malaria. The lower animals are absolutely immune to the forms of malarial disease found in man. The same immunity is found in a few human beings. There is a wide degree of susceptibility in different people; some going into a malarial district contract the disease a week after their arrival; others resist for months. The first attack of malaria for the newcomer in a malarious district is usually very severe. The fever is generally continuous or remittent, but is without definite periodicity.

The writer especially directs attention to the pernicious types of intermittent fever, which have as yet received comparatively little study at the hands of English writers. These attacks commonly appear in the course of an ordinary ague. The symptoms develop rapidly and may prove fatal in a few hours. These attacks are sometimes spoken of as cerebral in origin, and occasionally a diagnosis of apoplexy is made. There is, however, no hemorrhage of the brain. Another type of this pernicious fever may be mistaken for sunstroke, owing to the very rapid development of a temperature ranging from 105° to 110°. It is accompanied by delirium, which may rapidly merge into coma and death. In tropical countries malarial infection in a child is usually ushered in by an epileptiform convulsion. This is repeated two days later, and a diagnosis of epilepsy may often be made. In adults, frequently strong paretic nervous seizures are noted, such as aphasia or transient paresis of the ocular muscles. The explanation of these nervous phenomena is found in the fact that malarial parasites are collected in the brain in large numbers.

In certain districts malarial fever may present the ordinary clinical symptoms of cholera, the infection beginning with vomiting, purging, and rice-water stools. The writer emphasizes the fact that every practitioner in tropical countries ought always to suspect that any sudden and explicable attack may be traceable to malaria. He negatives the popular fallacy that all tropical countries are necessarily malarious; many of them are absolutely and relatively free from malaria.

Few diseases are as easily diagnosed as malaria. There is the clinical test of periodicity, but diurnal periodicity is of no value. A periodicity of twenty-four hours is shared with many other diseases, but it is otherwise with a periodicity of forty-eight or seventy-two hours, the latter being exhibited alone by malarial infection. Any disease exhibiting a tertian or quartan periodicity is certainly malarial. In diagnosis, quotidian periodicity should be absolutely ignored; such a form of periodicity is present in nearly all the suppurative processes, and is found in such common diseases as ulcerative endocarditis, surgical kidney, gall-stone, syphilis, and tuberculosis. The therapeutic test of quinine the author thinks is of great value, and if this drug is pushed for forty-eight or seventy-two hours, and there is no abatement of the fever, the diagnosis of malaria should be revised. Unfortunately, the latter means of diagnosis is not available in the pernicious forms of the disease, as the patient may die before a diagnosis is established. In these cases the practitioner must rely upon the microscope.

The treatment of malaria resolves itself into the use of quinine. The malaria of tropical countries is frequently so severe and the patient in such a condition that the drug cannot be given by the mouth. In these cases, and in severe cerebral attacks, quinine must be injected in the form of a soluble salt directly into the muscles. Blackwater fever is regarded as a form of hemoglobiuuria in which there is spontaneous recovery if the patient lives. With the advent of this symptom the parasite disappears from the blood, and there seems to be a process of natural cure. In such cases where the parasite cannot be detected in the blood, it is well to withhold the quinine, as the parasites have been practically eliminated by the pathological process.

Pathology of Cirrhosis of the Liver.—

At the last meeting of the British Medical Association the pathology of cirrhosis of the liver was discussed, Arthur Voelcker leading (*Lancet*, Aug. 18, 1900). There is a distinct difference between the peripheral and intercellular forms of the disease. While these two forms are associated, there is usually no difficulty in determining to which category to refer the chief change. It is rarely possible from microscopical section to form an idea of the naked-eye appearance of the organ. The classification of disease in this organ should be based upon its physical condition rather than upon causes. The same is true of a classification based upon the presence or absence of jaundice. The anatomical characteristics should furnish

a basis of classification, the size, character of the surface of the organ, and the changes in the interstitial tissue and the parenchyma. Cirrhotic livers may be large, normal, or small in size and weight; they may be smooth or granular on the surface; the fibrous tissue may be mainly in the periphery of the granules, or may be chiefly intercellular; and lastly, the liver cells may be fatty degenerated or show regenerative processes. The processes may be acute or chronic. The chronic forms can be divided into those in which the chief change occurs in the parenchyma, the fibroid fatty form, or those in which the interstitial connective tissue is more particularly affected. Of these cases, there are those in which the distribution of the connective tissue and its tendency to contract give the organ an irregular surface commonly called hobnailed liver, and those in which the intercellular distributions of the connective tissue cause a more uniform enlargement of the organ. In hobnailed liver the connective tissue has usually a portal distribution, while in those in which the livers are smooth and large a pericellular sclerosis is found.

Cirrhosis of the liver is generally due to one or more poisons acting on the liver cells and also on the connective tissue. The occurrence of degenerative or regenerative processes depends on the nature of the poison and on the power of the liver to resist it. The so-called new bile-ducts which are said to be formed in the liver are looked upon with some suspicion by the writer. They always suggest to him lymphatics or blood-vessels. He could find no record of their having been injected through the bile-duct.

Alcohol is no longer to be regarded as the exclusive cause of hobnailed liver. Of thirty-six cases coming under his observation, fifteen acknowledged the excessive use of alcohol, nine denied its use, and in twelve the history was not mentioned. In 2020 necropsies he found 149 cases of cirrhosis of the liver. In these, conditions due to venous hyperemia were excluded. This showed a percentage of 7.3 cases in all ages. Abont 25 per cent of these were of the hobnailed variety. Of ten enlarged livers, the average weight was under 104 ounces; the average weight of twenty-two hobnailed livers was 64.4 ounces, and the lowest was 44 ounces; in only eight was the weight less than 60 ounces. Jaundice was present in 11.4 per cent of all cases of cirrhosis, but was present in over 30 per cent of hobnailed cases. Of the 149 cases, only five occurred in children, and three of these were undoubtedly subjects of congenital syphilis. Of 4278 necropsies on children, only twenty-three cases of cirrhosis were noted; jaundice was noted in eight of the cases, and hobnail in

thirteen, a larger proportion than in those occurring in adults. An attempt was made to distinguish between the varieties of alcohol taken, but the inquiry was a difficult one owing to the fact that users of alcohol rarely confined themselves to one variety of drink. Large livers are rather more rare among beer drinkers than in those who drink spirits.

Spontaneous Rupture of an Apparently Normal Esophagus.—

E. J. McWeeney, in *The Lancet* of July 21, 1900, says that there are so far reported seventeen cases of this condition, of which sixteen were men. The average age of those in whom the accident occurred was 42, and in eight of them there was a distinct history of excessive drinking. Vomiting was an important symptom in half the cases. In a number there was a distinct feeling that something had "given way," which was followed by pain, usually of an agonizing character, speedily succeeded by collapse and always associated with dyspnea. Emphysema was a constant symptom, first appearing in the neck and then spreading to the face and downward over the trunk. This symptom was present in twelve of the cases. Most cases are rapidly fatal, though one is reported where the patient lived seven and one-half days. In all cases the opening in the esophagus was immediately above the diaphragm.

The case reported by the author is that of a man aged 40 years, who was admitted to hospital complaining of pain in the lower part of the chest. The face was deeply cyanotic, there was a swelling of the neck, the pulse was quick and weak, and the breathing was gasping. There was general collapse. Treatment was without avail, and death occurred seven hours later. Alcohol had been taken in abundance, the patient having been more or less drunk every night for twenty years. On the evening preceding his death he had partaken of tinned salmon, and the following morning had retched more than usual. He had continued at his employment until about noon of the day he died, and the exact time of the onset could not be determined. At the autopsy a slit-like aperture 1.5 centimeters long was found in the anterior surface of the esophagus immediately above the diaphragm. The opening had clean-cut edges, from which a few small blood-clots projected. The opening extended down to the level of the diaphragm, and from its lower end a tear in its mucous membrane ran some distance into the cardia. There was no laceration, and the wall of the esophagus was fully as thick as normal. The mucous membrane of the stomach was discolored and was softer than usual.

Microscopical examination of the margin of the rupture showed that the epithelium was well preserved except on the top of the folds which projected into the lumen. The tear was found to have taken place in a deep groove between two projecting folds of mucous membrane. The subepithelial layer was infiltrated, containing numerous thrombi, with marked degeneration of the unstriped muscle. The longitudinal and circular muscular coats were well developed. The writer draws no very definite conclusion from the microscopic study of the rupture, which is the first that has been published. There was nothing brought out that would show the cause of this very rare condition.

A New Pathogenic Mold.—

W. H. Ophuls and H. C. Moffitt, in the *Philadelphia Medical Journal* of June 30, 1900, present a preliminary report on a new pathogenic mold which was formerly described as a protozoon under the name "coccidioides immitis pyogenes." The patient from whom the organism was obtained was a farm-laborer aged 19, whose sickness began eleven weeks before admission to the hospital, with a chill. After a few days the left pleura was tapped and a large quantity of clear fluid was removed. The patient had an irregular fever, the temperature at times reaching 104°. The diazo-reaction was present, but not the Widal. About four weeks after the ouset of his trouble, painful inflammation of the knees, elbows, wrists, and ankles developed. Later there was a fluctuating swelling over the left eye, and a large gland developed in the supraclavicular fossa. There was cough, with mucopurulent and occasionally blood-stained sputum. There were no tubercular bacilli in the sputum. The lungs were irregularly consolidated. There was bronchial breathing and harsh and dry râles. The heart was enlarged, but otherwise normal. The leucocyte count was seventeen thousand. The patient died ten days after admission, about twelve weeks after the onset of the disease. The autopsy showed acute bronchial pneumonia, abscesses of the retroperitoneal lymph glands, and encapsulated empyema, enlarged and softened spleen with colloid swelling of the liver and kidneys.

In all the diseased parts that were examined, there were found peculiar parasitic organisms, which, in the few recorded cases, have been described as protozoa. The life history of these parasites shows the youngest forms as small spherical masses of protoplasm enveloped in a membrane. The protoplasm is granular and stains well, and is occasionally vacuolated. The organism sometimes

attains a diameter of 30 micromillimeters and is always perfectly spherical. When the adult stage is reached, the capsule breaks and one hundred or more spore-like bodies are detached. Locomotion was never observed in the adult forms nor in the spores. The close resemblance of these spores to coccidia led to their classification as protozoa. The lesions produced by their presence in the human body are chronic suppurating processes. The organism, grown upon agar-agar, showed no mycelia. Inoculated into guinea-pigs, it caused suppurating foci, and the same mold was recovered as had been noted in the patient. The organism was found to develop mycelia, when free in a culture medium such as a hanging-drop of bouillon.

Granular Degeneration of the Erythrocytes.—

Ernst Grawitz, in the *American Journal of the Medical Sciences* for September, 1900, has had his attention attracted to a granular degeneration of the erythrocytes, especially in toxemic conditions. To demonstrate these granules, spreads of blood are made in the usual way and allowed to dry in the air. It is then fixed with 99-per-cent alcohol. After this a basic dye, such as methyl blue or hematoxylin, is used, either alone or in combination with acid counterstain. In the latter case an eosin hematoxylin or an eosin methyl blue is employed. Red cells which show this characteristic appear full of dark-blue points. They occur in all forms of the erythrocytes, and to his mind indicate a degeneration of the protoplasm of these cells. In lead poisoning this form of granular degeneration was found to be almost invariably present. It is observed in malaria, and is not infrequently found in persons who arrive in the tropics who have not been infected with either dysentery or malaria. In these cases it is thought to be due to high temperature. Experiments were made upon white mice, exposing them to a continued high temperature, when it was found that the blood presented the characteristic changes without there having been any infection. This form of granular degeneration is found to be very marked in so-called cases of progressive pernicious anemia, also where there is cancer of the digestive tract, and presumably autointoxication from the intestinal tube. From the fact that this form of degeneration is not found in chlorosis, the author is confirmed in his opinion that this condition is not primarily a disease of the blood or of the bone-marrow, but is a neurosis. It is only when complications, especially obstipation and other forms of autointoxication, appear in the course of chlorosis that degenerative changes are found in the blood-

corpuscles. In carcinoma granular erythrocytes are especially numerous. In septic processes the same changes occur in the erythrocytes. The author regards the absence of these signs of degenerative changes in the erythrocytes as of very great importance from a diagnostic standpoint. Such a finding he thinks excludes the idea of anything circulating in the blood which affects its constitution unfavorably. In other words, an absence of degeneration of the erythrocytes excludes auto- and other forms of intoxication.

Extra-buccal Feeding.—

C. A. Ewald, in a paper before the Thirteenth International Medical Congress (*Medical Record*, Aug. 18, 1900), discusses (1) rectal feeding by means of nutritive enemata; (2) feeding through the cutaneous surface by means of subcutaneous or intravenous injections of foodstuffs; (3) feeding after gastrostomy. He says that none of these means are capable of supporting life indefinitely, and under no circumstances can they be made to answer the demands of normally healthy individuals. Under favorable circumstances it is possible through the exclusive use of extra-buccal feeding to maintain for some time the nutritive balance, in those whose metabolic activity is greatly lessened. In most cases, however, a state of under-nutrition supervenes, due to the fact that elimination is greater than ingestion. These measures, therefore, merely reduce the deficit. At best it is only a makeshift, tiding the patient over certain critical stages of his disease, or it may be resorted to for a definite therapeutic purpose, as in certain diseases of the stomach. It is also useful when employed as a supplementary means of nutrition, in which the nourishment taken by the mouth is insufficient.

In the preparation of rectal enemata, pancreatized emulsions have fallen more and more into disuse, as it has been shown that the albumen of egg and of milk is absorbed without preliminary peptonization. This is greatly increased by the addition of table salt. The various preparations found upon the market in part convert it into albumoses, but do not present any special advantages, and they are frequently irritating. Guided by an extended experience, the writer is of the opinion that the best combination is two tablespoonfuls of wheat flour stirred into 100 cubic centimeters of lukewarm water or milk, adding to this mass one or two eggs with a pinch of salt. The whole is beaten up with 50 to 100 cubic centimeters of a 15- to 20-per-cent solution of glucose. To this mixture some peptone may be added, but it should not be forgotten that

the more complicated such a mixture becomes, the more apt it is to be irritating. Nutritive enemata are to be preferred to the subcutaneous injections of oil. The applicability of the latter lies rather in isolated cases than as a measure for wide-spread use.

Differential Diagnosis of Chronic Rheumatism.—

J. J. Walsh, in the *Medical News* of September 1, 1900, says that of late years a great advance has been made in the diagnosis of acute rheumatism, though it is probable that under this term are still grouped several different infections and pathological types which will ultimately be differentiated. This advance, however, has not been felt in the domain of chronic rheumatism, as here we have a number of types which are still classed under the same term. He would distinguish four classes of cases:

The first, recurring subacute rheumatism. By this he understands slight attacks of arthritis with some swelling and infiltration of joints that occur at no great intervals in certain predisposed subjects.

A second group occurs mainly in children with symptoms of periarticular involvement that occur over and over again, especially during unsettled weather. Such children frequently suffer from fleeting pains, sometimes described as growing pains. Recurring tonsillitis, chorea, and their equivalents of rheumatism are observed in this class.

A third group is one that deserves the term chronic rheumatism. It contains the cases in which joint lesions that have occurred during an attack of rheumatism persist and even become worse by secondary degenerative processes extending over years.

The fourth class of cases, more numerous than the others, is frequently called chronic rheumatism, but is really not rheumatism in any proper sense of the word. It contains a varied collection of ailments, the differential diagnosis of which sometimes presents considerable difficulty. A diagnosis of rheumatism is not uncommon when a patient presents himself to a physician complaining of pain and some joint disability, where there is no history of traumatism. Additional confirmation is lent to such a diagnosis by the fact that they may be relieved by salicylic acid or one of the coal-tar derivatives. The diagnosis of rheumatism is frequently made where the pain is about the ankles and feet, and upon analysis many of these are found to be due to flatfoot, and are easily relieved by the proper correction of the deformity. The occupation neuroses also furnish a group of cases which are often diagnosticated rheumatism.

Thrombosis of the Coronary Arteries.—

J. R. Rothrock, in the *St. Paul Medical Journal* for August, 1900, says that experiments have shown that obstruction of the coronary arteries may lead to (1) sudden death; (2) infarct; (3) rupture of the heart; (4) fibrous myocarditis; (5) aneurism. Patients who have died suddenly from closure of the coronary arteries always have a thrombosis or an embolus somewhere in their lumen. The former is by far the more common, though many well authenticated cases of embolism in the absence of any lesion of the coronary arteries are on record. Embolism usually occurs in young individuals, and is due to a fragment which is washed by the blood-current from the valves of the heart or from the roughened walls of the aorta. Syphilis and alcoholism especially predispose to the formation of thrombosis; occasionally a history of rheumatism with a complicating endocarditis is found. In most instances of sudden death from coronary embolism, infarcts have been found in other organs, especially the kidneys. Thrombosis is most frequently seen in patients past middle life, while embolism is more common in young individuals.

The writer reports the case of a man aged 48, who, while engaged in his ordinary occupation, died in a few minutes. He had been under observation for some time for a disease which had been diagnosticated angina pectoris. At the autopsy the heart was found enlarged, the pericardium free from adhesions, the left ventricle thickened, and its chamber dilated. The anterior coronary artery was thickened, and four centimeters from its origin a thrombus was found firmly attached to its wall, about three centimeters in length, at one point quite occluding the lumen of the vessel. The right coronary artery was thickened. The heart muscles showed slight fibrous degeneration. An old, well organized hemorrhagic infarct was found in the right kidney.

Prognosis in Cardiac Affections.—

J. J. Morrissey, in the *International Medical Magazine* for August, 1900, says that an accurate prognosis in heart disease is dependent upon a complete diagnosis. This cannot be based solely upon the physical signs alone, but must take into account a comprehensive history of the affection and a close consideration of any special features characterizing the case. A murmur does not necessarily indicate a grave prognosis. It is always to be considered in its relation to the condition of the cardiac walls, the length of time the lesion has existed, the presence of dilatation or degeneration, or

both combined. The occupation or the temperament may be essential factors in the prognosis. Each individual is a law unto himself, though certain general principles may be established. Murmurs do not invariably mean endocarditis, and a prognosis based solely upon the presence of a murmur would demonstrate incapacity on the part of the physician. A skilled observer has said: "With an apex beat in the normal situation, and regular in rhythm, the auscultatory phenomenon may be practically disregarded." A murmur at the apex is not necessarily a grave sign if it is found that the heart is doing its work thoroughly. From the standpoint of longevity, aortic stenosis is a variable lesion; it commonly appears in middle life, and is not infrequently associated with atheromatous changes of the entire vascular system. It occurs frequently, however, without these other pathological manifestations. The relative frequency of different lesions is stated in the writer's experience to be as follows: Of 225 cases of cardiac disease, aortic insufficiency was present in eighteen, aortic insufficiency and stenosis in forty-five, and aortic stenosis in six, mitral insufficiency in sixty-five, mitral insufficiency and stenosis in seventy-four, mitral stenosis in fourteen, fatty degeneration in two, pulmonary contraction in one.

Minor Forms of Cardiac Dilatation.—

Beverly Robinson, in the *American Journal of the Medical Sciences* for August, 1900, says that pronounced degrees of myocarditis or valvular disease accompanied by dilatation are readily recognized, but the minor degrees of dilatation are frequently confused with some other condition, or are overlooked altogether. Well advanced cases of cardiac dilatation are easily recognized by the usual methods of physical examination. Minor forms of dilatation are often met with associated with other conditions, such for example as anemia. In these cases there is a subjective feeling of cardiac irregularity. Abnormal sounds are not always present, and there may be no marked accentuation of the second sound. As a rule, however, the cardiac pulsations are more frequent than usual, and the first sound is exaggerated. In such a case a week or two of treatment with digitalin, followed by iron, will give excellent results. Such a case frequently has urine that is light-colored, of low specific gravity, but does not contain albumin or casts. Rest in bed will change this urine to that of a higher specific gravity, and even without rest cardiac tonics will have the same results. Such conditions as this are often attributed to impairment of the nervous tone, but the author regards them as due to a certain amount of impairment of the

heart muscle. This same slight degree of dilatation without hypertrophy is common in women between 40 and 50 years who have a tendency to obesity. There is not infrequently a marked rheumatic tendency, and an excess of urates and uric acid is found in the urine. It is found in another type of women who are thin and nervous, who suffer from dilatation of the stomach, and whose digestion is very much impaired, with an inactive liver and torpid bowels. This same moderate dilatation of the heart occurs in men, but it is less frequent than in women.

The Bacillus of Dysentery.—

R. P. Strong and W. E. Musgrave, of the First Reserve Hospital of Manila, have made a careful study of the dysentery which prevails in the Philippines (*Journal of the American Medical Association*, Aug. 25, 1900). In Manila this is a very common affection, for it constituted 14.65 per cent of the 9063 cases forming the total admissions to this hospital. About one-half of the cases recovered so that they could return to military duty; 125 died—a mortality of 9.4 per cent. This latter figure, however, does not represent the danger to life, as a large number of cases were transferred to other hospitals, and 338 were sent to the United States. The cases that were sent home, reaching San Francisco on transports, were studied by C. F. Craig. The results of this study coincide closely with those made in Manila, the investigation conclusively pointing to two types of dysentery, one dependent upon a specific bacillus said to resemble the bacillus typhosus or the bacillus coli communis; the other is the ordinary amebic dysentery of the tropics. The patients infected with the ameba usually die before reaching San Francisco from the Philippines. Those infected with the bacillus of dysentery are taken with an acute illness which may prove fatal, but if the patient survives the primary invasion the disease frequently becomes chronic or subacute, and may persist for some time, or indefinitely.

Chronic Brass Poisoning.—

The *Medical Record* editorially says that those who are engaged in manipulating brass, such as stamping and polishing, are liable to absorption of the metal and a consequent constitutional disturbance. In most of these cases there is a typical green line at the margin of the gums which is probably due to the deposition of copper. One of the earliest symptoms is anemia, and with it are often associated palpitation of the heart and dyspnea, on exertion. Digestive disturbance, loss of appetite, and pain in the epigastrium are fre-

quently noted. A rapid heart is common. There are slight indefinite pains of a neuralgic character, and signs of weakness and nervousness. As the disease progresses emaciation becomes conspicuous, with loss of strength and tremor. The knee-jerks are exaggerated, unless peripheral neuritis is present. Headache is almost always present, as well as pain varying in character and situation, neuralgic and myalgic, usually in the abdomen, but occasionally in the chest, back, and legs. The tongue is generally coated; there is often a dry, tickling cough. The pallor is distinct, the complexion being sallow and unhealthy looking. Laryngeal and pharyngeal catarrh are common, often associated with aphonia and a sense of dryness or constriction of the throat. The sweat stains the linen green. Itching and cutaneous eruptions occur. Pulmonary fibrosis is common, and paraplegia due to peripheral neuritis may occur. In treating the affection, potassium iodide is of no use, but satisfactory results are obtained from dilute phosphoric acid in doses of fourteen minims three times a day with one-fortieth of a grain of phosphorus in pill form.

Nostalgia a Form of Neurasthenia.—

Lubetzki, in the *Journal de Médecine* of July 8, 1900, says there have been wide differences of opinion expressed as to the exact nature of this malady. A thesis was presented on the subject by Raoul Chenu in 1877. Since 1880, however, nothing has been written on the subject. The author conjectures that perhaps the disease has disappeared, or that it may have become less frequent because of the ease of communication and the rapidity of transportation.

He gives the history of two cases, which are not at all striking, but the most interesting part of his communication relates to the views of the earlier writers on this malady. Hoffer, in 1685, said that it was a disease of the imagination and had its seat in that portion of the brain in which objects were represented and preserved. Boerhave did not regard it as a morbid entity, but as a form of melancholia. Cullen classed it among the diseases of the intellect, having a close resemblance to melancholia. In this he was followed by Sagar, Sauvages, and Pinel. In 1873 Haspel presented to the Académie de Médecine a monograph on the subject which was crowned by the Académie. In his opinion nostalgia was not a monomania, not a form of insanity; neither was it due to meningitis, but it was a moral perversion characterized by fixed ideas. The

author is of the opinion that the disease is closely related to neurasthenia, having identical causes, practically the same symptoms, and may, if prolonged, result in profound disturbance of the general health, even leading to tuberculosis. The person affected with nostalgia may be hypochondriacal or melancholy. This is also true of the neurasthenic, and either may lead to suicidal attempts.

Edema of the Lungs.—

J. A. Le Sage, in *L'Union Médicale du Canada* for June, 1900, says that acute edema of the lungs is a grave complication which occurs in the course of acute or chronic nephritis, accompanied or not by cardiovascular changes. The attack commonly occurs without premonitory signs, frequently coming on in persons of comparatively good health. The complication is characterized by embarrassment of respiration and the expectoration of a rose-colored sputum. On auscultation an extraordinary number of râles, both fine and subcrepitant, are found, rapidly invading all parts of both lungs. The diagnosis is comparatively easy when one considers the vascular changes which take place in nephritis, and commonly the presence of albumin. The prognosis is grave. The treatment should consist of abundant bleeding, cardiac stimulants, alkaline drinks, and food restricted to milk. In acute edema of the lungs morphine is strictly contraindicated.

SURGERY.

Operative Treatment of Cirrhosis of the Liver.—

Friedrich Friedmann, in the *Centralblatt für die Grenzgebiete der Medizin und Chirurgie* of August 8, 1900, has a *résumé* of the recent literature of this operation. The first case in which there was a deliberate attempt to reestablish the circulation in the abdomen in a case of contracted liver was made in the Royal Hospital of Newcastle by Drummond and Morrison in August, 1894. This case was reported in the *British Medical Journal* of September 19, 1896. The authors had been led to perform the operation from a case which had been observed post mortem, in which anastomosis had formed in such a way as to permit of the circulation being carried on without the blood passing through the liver. The possibilities of such communication are said to be several—namely, anastomosis between the coronary veins and those of the lower portion of the esophagus; between the hemorrhoidal veins and the hypogastric veins; a communication

between the veins found in the hepatic ligament and those of Glisson's capsule; the veins of the cæcum and colon are said to anastomose with the internal mammary vein. Since the first operation, thirteen have been performed. Of these, five have recovered, two were improved, in one there was no change, and five died. These results point conclusively to the value of the operation, as these patients had very little to look forward to without surgical intervention. The kind of cases in which the operation is indicated are those in which there is a distinct mechanical hindrance in the portal circulation with recurring ascites. It is in this class of cases that so little is to be hoped for from operative measures, the patients having little to look forward to except a lingering illness and comparatively early death. The technique, as carried out in most of the cases, is comparatively simple, consisting of a small incision into the abdominal cavity, through which a careful exploration is made of the liver, gall-bladder, and the surrounding parts. The peritoneum is curetted over the anterior surface of the abdomen, and the great omentum is attached by sutures to the abdominal wall. The peritoneum has its epithelial covering removed over the lateral and anterior portion on the left side of the abdomen, to which the spleen is likewise attached. A glass drain is then inserted, and all ascitic fluid of the abdominal cavity is removed. This drainage is continued until no further fluid is formed, which shows that the collateral circulation has been established. The success of the operation is absolutely dependent upon a functional intact condition of the liver cells; the ascites being merely dependent upon mechanical hindrance to the onward flow of the blood. Hence, in cases of cirrhosis it should be undertaken before the process in the liver has advanced so far as to involve the functional integrity of these cells.

Ligature of the Abdominal Muscles.—

W. W. Keen, in the *American Journal of the Medical Sciences* for September, 1900, describes the case of a patient who two months before admission to hospital had an attack of severe pain in the epigastric region. Half-way between the ensiform cartilage and the umbilicus a tumor about seven centimeters in diameter could be felt. On palpation a distinct expansile pulsation was apparent. A diagnosis of aneurism was made. The patient then left the hospital, and five days later was brought back with a smooth elastic tumor nearly filling the left side of the abdomen. The pulse was weak, and the patient was partially collapsed. A diagnosis of ruptured aneurism was made. Upon opening the abdomen a large, dark

tumor presented, which was clearly an enormous hematoma due to hemorrhage, behind the external layer of the mesocolon. No attempt was made to remove the hematoma, and the abdomen was closed. Hypodermic injections of a two-per-cent solution of gelatin in sterile salt solution amounting to 48 cubic centimeters were given four times.

A second operation was performed. The abdomen was opened and the hand passed directly backward to the aorta. An aneurism needle was passed behind the vessel, but the working space between the aneurism, which was fixed below, and the diaphragm was so contracted that though the point of the needle could be felt, it was almost impossible to seize the thread. Finally the thread was secured and tied, the aneurismal pulsation in the femoral artery ceasing at the same time; also the pulsation in the sac of the aneurism. As soon as the aneurism was tied, the head, face, and neck became livid; this condition subsided within a few hours. With the tying of the aorta the aneurism shrunk to half its original size. The anesthesia lasted one hour and twenty-five minutes. Motion was not impaired, and sensation in the lower extremities was but little affected. Eight days after the operation the femoral artery was found to be pulsating slightly. In January gelatin solution was again employed, but the results of this treatment were negative. Early in February the patient rapidly grew weaker, and on the fifth day of that month died.

At the necropsy the abdominal aorta was found cut through at the point where it had been ligated. From this opening in the vessel blood had infiltrated downward behiud the peritoneum and finally burst into the peritoneal cavity just over the right kidney. Three centimeters below where the vessel was tied was found an opening in the posterior wall of the aorta. This connected with a false aneurism. The remaining portion of the autopsy was negative.

The writer gives a *résumé* of twelve other cases reported in the literature. Ten of these died very shortly after the operation, but three survived long enough to confirm the possibility of successfully performing the operation. Death will result almost invariably from ulceration and perforation at the point of ligation. The uselessness of the ligature has led the author to devise an instrument consisting essentially of a clamp, with a long handle, which is to be applied to the aorta, the end projecting out through the abdominal opening. Once in position, pressure is to be exerted gradually until the pulsation of the femoral ceases. It is believed that such a clamp might successfully be used with modern aseptic methods. The instrument has been tried upon dogs.

Dislocation of the Ulnar Nerve.—

F. J. Cotton, in the *Boston Medical and Surgical Journal* of August 2, 1900, says that this accident is not often spoken of in the literature, and where it is mentioned but few belong to the traumatic class. A case was described by Blattmann as early as 1851. The first adequate accounts were those of Lutz in 1879, and of Zuckerkandl in 1880. The cases grouped themselves into two classes—those of "habitual" luxation, where there is no known existing cause, and the traumatic variety, where there are accompanying symptoms of greater or less severity. The trauma may be due to direct violence or muscular overexertion. In all these cases, of either class, the anatomical conditions are the same; when a certain degree of flexion is reached the nerve moves inward to the tip of the internal epicondyle, and in severe cases snaps over it and lies on the anterior surface; it returns to the normal position when the arm is extended. In certain rare cases the luxation may be permanent. Writers who have systematically examined the position of the ulnar nerve find that it has an abnormal mobility in a considerable number of cases. In the majority the condition is symptomless.

A case reported by the writer gives the typical picture of recurring luxation, due to traumatism. The patient, a woman of 25, fell and struck her elbow. Following this there was pain upon using the arm. A week after the accident the elbow was slightly puffy and tender, but there were no signs of bone injury nor of effusion into the joint. Movements caused severe pain at the inner side of the elbow, and a tender cord was felt in front of the internal condyle. On extension of the elbow this cord slipped back behind the epitrochlea. The nerve was thicker than normal, and when rolled under the fingers the patient complained of pain in the last two fingers. This referred pain was not much greater than that upon the opposite side, but the local sensitiveness of the nerve trunk was greatly increased.

The forward luxation of the nerve recurred with each flexion, when a right angle was reached; the nerve slipped back spontaneously with each movement of extension; slight pressure over the internal epicoudyle prevented the nerve from slipping forward. The prominent subjective symptom was pain at the elbow on motion. The arm was put in a splint at an obtuse angle and a pad placed over the internal condyle. After a fortnight's fixation the pain and sensitiveness had decreased, and there was less tendency for the nerve to slip out of place. Massage and light use of the elbow was allowed, this being followed by slight but steady improve-

ment, and the patient soon discontinued treatment. When seen four months later she could use the arm nearly as well as ever and complained only of occasional darting pains in the hands.

Operation in Wrist-drop.—

W. W. Keen, in the *Medical Chronicle* for August, 1900, reports six cases of secondary operation for wrist-drop from injury to the musculospiral nerve in fracture of the humerus. In four of these cases there was very little improvement, while in two there was complete restoration of function. The musculospiral nerve is peculiarly exposed to injury in fractures at and below the middle of the humerus. The results in this accident are very grave, as the hand with wrist-drop is practically useless. Secondary nerve suture is frequently followed by poor results. This he attributes in several of his cases to ignorance or carelessness of parents. Scarcely any good will result from the operation unless massage and electrical treatment are carried on for at least a year. The space between the divided ends of the nerves may be filled in various ways: first by stretching and by filling the gap with strands of catgut, or, in cases where it is necessary, a resection of the shaft of the humerus. In two cases in which Keen bridged the gap in the nerve by catgut there was no improvement, but this, he thinks, was in part due to neglect of after-treatment. The resection of the humerus in such cases is to be recommended, particularly in cases where the fracture is not united. In one of his cases in which this operation was done, the nerve ends were readily approximated, but there was little improvement in the paralytic trouble because of extensive laceration of the muscles. The ununited fracture of the humerus, however, was relieved so that a fairly useful hand was obtained. In one of his cases the humerus was united with aluminum-bronze wire. One year afterward the wire was still present, showing no signs of disintegration. Two years later, upon *x*-ray examination, it was found to have entirely disappeared.

Lung Complications in Ether Inhalations.—

Dudley Buxton, in the *Clinical Journal* of August 1, 1900, expresses his regret at the license which has crept into descriptions under the terms "ether pneumonia" and "ether bronchitis." These terms are badly chosen, as the lung complications following the inhalation of ether are not different from those due to other causes. Again, chloroform undoubtedly has some action upon the respiratory passages, but the surgeon refers such complications to

general causes, while, if ether has been given, it is charged to the anesthetic. Respiratory complications following ether are very rare. Schultze found only seventeen cases in 4914 administrations. In seven, these complications occurred from the fifth to the twenty-fifth day, and only two happened within twenty-four hours after operation. The writer thinks that it is difficult to attribute to the anesthetic cases which occur later than twenty-four hours after the operation. It has been noted that respiratory complications in private practice are much less frequent than in hospitals, from which the author concludes that the chilling of the surface sometimes following operation is an important element in the development of inflammation of the respiratory tract.

Exposure to cold and draughts plays an important part in the development of "ether pneumonia." Under the influence of an anesthetic the temperature always falls from two to four degrees. Under these circumstances the patient is taken into an operating-room where the temperature is high. The greater portion of the body is uncovered. Following this, he is moved along a draughty corridor into a ward where two or more windows are open. Every administration of ether should be preceded by a careful examination of the lungs, and the patient should be carefully wrapped both during and after the operation, and protected from draughts. The amount of ether administered determines to a large degree the danger of respiratory complications. After the patient is under the influence of the anesthetic, comparatively little is required. An effort should be made to keep the narcosis at a point just short of cyanosis, as the latter causes capillary stasis tending to the production of pneumonia.

Injections of Ether in Sebaceous Cysts.—

Emile Sergent, in *La Presse Médicale* of June 30, 1900, has an interesting article on the treatment of sebaceous cysts by injection. The proceeding was first employed by Vidal in 1883, and was practiced extensively by Lermoyez. Sergent has treated about thirty cases, all of which were radically cured. The manner in which the injection acts has been variously explained. By some it has been thought to be due to an inflammation excited in the wall of the sac, and by others to the power which ether has of dissolving the sebaceous matter contained in these cysts. The writer is of the opinion that the latter explanation is correct, for he says that inflammation is an accidental concomitant due to a failure in aseptic technique. It is possible to treat cysts of all sizes in this way, but those

which are small, composed mostly of fibrous tissue with very little sebaceous matter, are not likely to be benefited. The method is inapplicable to cysts that have already undergone inflammatory changes.

Pure sulphuric ether is employed, and the usual operative aseptic procedures are used. A hollow needle connected with a sterilized syringe is thrust directly into the cyst. The cyst is then distended with ether, the needle being allowed to remain in position. The ether immediately dissolves the sebaceous contents of the cyst, and some of it escapes. Then more ether is introduced. The number of injections required will depend upon the size of the cyst and the condition of its walls; commonly from four to twelve are necessary. When the cyst is much softened or fluctuation is apparent, and a brownish crust appears at the margin of the point where the needle is thrust into the sac, the contents may then be readily expressed by opening up the tract with a stylet. If this cannot be done, an additional injection or two may be given. After the contents of the sac have been evacuated, it is possible to remove the sac through a comparatively small opening. It is claimed that this is the best treatment for cysts of medium size. It is not painful, no blood is lost, there is no danger, and no cicatrices are left. The latter the writer regards as of especial importance, as he says there is really little to choose between a head which is covered with wens and one which is covered with scars left by their removal.

Late Suppurations Following Injuries to the Skull.—

R. C. Dugan, in the *St. Paul Medical Journal* for August, 1900, reports the case of a man who was run over by a wagon. The patient thinks that he retained consciousness. The back and shoulders were bruised, but there was no evidence of head injury. He was confined to the house one week and then resumed his employment. On the tenth day after injury his head began aching, and a small swelling was noted on the top of the head. This swelling continued to increase for the next seven days, when he had a severe chill. He then came under medical observation. An enlargement about the size of half a small orange was noted just behind the coronal suture. The patient had a temperature of 101° F. The swelling was opened, and two ounces of thick pus evacuated. Beneath this abscess a stellate fracture was detected, in which were some small pieces of bone. Immediate operation was declined by the patient, but later the fracture was fully exposed and the broken external table removed. A portion of the internal table was found

lying loose on the dura mater, surrounded by pus and granulation tissue. All broken bone was removed, granulation tissue scraped away, and the flap returned to place. There was an uneventful recovery.

The case is instructive as showing that the skull may be severely injured without loss of consciousness or suspicion of head injury by the patient or attending physician. Acute suppuration may occur as late as two or three weeks after injury.

Peculiar Fracture of the Os Calcis.—

F. A. Southam and A. E. Rayner, in the *Medical Chronicle* for July, 1900, describe the case of a woman aged 62 who in a fall injured her left foot. No very definite statement as to the accident could be obtained, but on trying to rise she felt a very severe pain in the heel. The following morning the posterior part of the left foot was found to be ecchymosed and swollen, and on the posterior surface of the heel a hard transverse ridge could be felt beneath the skin. No crepitus was obtainable, and all power of flexion and extension of the foot was lost. A skiagraph made at this time showed that the attachment of the tendo Achillis to the os calcis had been torn away, the fragments being separated from the bone by the space of about an inch. An incision was made over the center of the posterior surface of the heel, the blood-clots were cleared away, and a silver wire drawn through the main body of the os calcis and then passed through the upper fragment close to its attachment to the tendo Achillis. The foot placed in a position of extreme extension enabled the detached fragments to be brought down into accurate apposition with the rest of the bone. Nine days later the superficial sutures were removed, and a skiagraph taken eleven days after the operation showed the fragments in accurate apposition and the silver wire *in situ*.

Suture of the Liver.—

F. P. Canac-Marquis, in *La Presse Médicale* of July 11, 1900, describes a new method of suturing and of securing hemostasis in solutions of continuity of the liver. He employs for this purpose a curved needle, which is introduced at one end of the wound and some distance from its edge. It is carried through the substance of the liver beneath the deepest portion of the wound so as to be entirely buried. This is repeated back and forth until the further end of the wound is reached. Then the needle is again introduced and carried through the wound from side to side on a level above

that of the preceding sutures. This procedure is repeated until the opposite ends of the wound are reached, when the two ends of the suture are tied. The tightening of such a suture is found to completely close the wound both superficial and deep, preventing hemorrhage, and at the same time necessitating but a single suture. The best needle for this purpose is round, of good length, and one which perforates the substance of the liver without cutting. The suture should be soft and large so as not to cut the friable tissue of the liver, and of sufficient flexibility to adapt itself to the tissues without tearing the liver substance. In tying the suture, traction should be made with care, as the liver substance is very friable.

THERAPEUTICS.

The Treatment of Traumatic Tetanus by Subcutaneous Injection of Emulsion of Brain.—

Anton C. Krokiewicz, in the *Wiener Klinische Wochenschrift* of August 9, 1900, reports two cases treated by this method. The author reported his first case in 1898, which was immediately after the publication of Wassermann's and Takaki's experiments upon animals. Since then the method has been applied in one case by Schram, in three by Kadyi, in one by Zupnik, and in one by Schuster. All of these were followed by recovery, excepting Zupnik's case, which was one of puerperal tetanus, and in which there was marked improvement in the tetanus symptoms, but the patient died from complications connected with the puerperium.

The first patient of Krokiewicz was a physician who received a wound of the index-finger while making a post-mortem examination. Twenty hours later there were cramps in this hand, and three days later they had become general; at the time he was seen by the writer he had been some hours with rigidity of all the muscles. The temperature was slightly higher than normal, respirations were 32, and the pulse too small to be felt. An injection of morphine rendered the patient a little more comfortable, and he was then removed to the hospital. The same night, notwithstanding inhalations of ether and subcutaneous injections of morphine, a severe convulsion set in which lasted three and a half hours. This convulsion was followed by a subcutaneous injection of an emulsion composed of the entire brain of a rabbit. A like injection was made three days later, and a third two days after that. The first was followed by an improvement of the pulse, some fall in the tem-

perature, and a lessening in the frequency of respiration. After the first injection the cramp entirely disappeared and did not recur.

A second case was that of a woman 35 years old, whose tetanus resulted from a splinter of wood which had penetrated the thumb. Six days later she was brought to the hospital with well marked symptoms of tetanus. The following day there was listlessness, continued trismus, opisthotonus, and cramps in the upper and lower extremities. An emulsion of a rabbit's brain was given and was followed by a marked improvement in the spasms. That same evening the patient swallowed normally, and spoke so that she could be understood. The following night she slept well without opiates. Notwithstanding the improvement in the tetanus, the patient suddenly died four days after admission. At the autopsy bronchial catarrh with fatty heart was found.

Systematic Hearing Exercises in the Treatment of Deaf-mutes.—

Victor Urbantschitsch, in the *Journal of Eye, Ear, and Throat Diseases*, July-August, 1900, says that it is five years since this method was first employed with noteworthy results, but it has not come into general use. As early as possible he endeavors to ascertain whether the patient is capable of receiving any ordinary impression. This is accomplished by using the loud and harsh tones of an accordion near the child. If it shows signs of fright, it can be assumed that there is auditory perception; if not, the effort is again made at the end of six months. In children from three to four years of age an object is shown to the child and its name shouted into the ear. With deaf-mutes who have been taught to speak and read, the exercises are begun by shouting a long drawn out vowel sound into the ear, at the same time pointing to the printed character. This is soon followed by the use of words of one syllable, and a child can thus be taught a vocabulary before he can distinguish clearly between the sounds of individual letters. The perception of a sound is not only due to its loudness, but also to its duration; therefore the words should be lengthened as much as possible. When the hearing is much reduced, this exercise requires an enormous amount of time and patience, and can only be carried out by individual instruction. The amount of effort required on the part of the patient is very great, and auditory fatigue appears early. As soon as this shows itself the exercise should be suspended. The author claims that systematic hearing exercises not only develop the sense of hearing, but also the nervous pathway for auditory perception. It is a matter of experience

that many deaf-mutes receive many auditory impressions which they are unable to interpret. Not infrequently persons are met with who are said to be unable to hear spoken words, but who on careful examination show an astonishing degree of hearing power. Of necessity, the method is only applicable to those deaf-mutes who have a perception of sound. Unless this is carefully looked for it may never be known; when found, it may often be developed so that the patient can hear vowels, then words, and even short phrases. The extent to which the hearing power may be developed can only be determined by actual trial in a given case.

Superheated Air in the Treatment of Affections of the Upper Air-passages.—

M. Lermoyez and G. Mahu, in *La Presse Médicale* of July 25, 1900, say that superheated air has been employed in therapeutics for some time. Hollaender uses it in the treatment of lupus; Gautier and Larat in the treatment of ozena; Jayle has applied it to certain gynecological uses; and Balzer has utilized it in the destruction of soft chancres.

The apparatus constructed by the authors consists of a cylinder of compressed air under a pressure of 120 atmospheres. This is connected by a flexible tube with a metal chamber which contains a coiled metal tube, the latter containing the air under pressure. The external chamber is heated to a high temperature by a Bunsen burner. The coiled tube is connected with an exit pipe composed of overlapping metal sections which admit of its being moved in all directions. The extremity of the tube is guarded by a valve which admits of regulating the pressure and temperature.

The author has employed the apparatus in the treatment of those nasal conditions which are not amenable to operation. In congestion and tumefaction of the turbinates, the action of the superheated air was especially satisfactory. It immediately anesthetized the mucous membrane and caused a marked contraction of the engorged tissues. The first effect of the treatment is an abundant discharge of mucus. Marked curative effect was found in cases accompanied by hypersecretion. Those in which the secretion was purulent did not present the same degree of improvement. In otalgia the most remarkable results were obtained, particularly in that frequent variety in which it rises as a reflex from the nasopharynx. In these cases the superheated air was applied to the vault of the pharynx, and in many cases the pains ceased after the first application. It has proven of especial value in those cases

which had become addicted to the use of cocaine as a spray in the nose; it immediately overcame the congestion and embarrassment of respiration in these cases, enabling the patient to dispense with the drug.

Hydrotherapy in Pneumonia.—

Simon Baruch, in the *Medical Record* of August 4, 1900, says that he does not approve of cold full baths in pneumonia, though they have been recommended by some in the pneumonias of young children. In children with bronchial obstruction it is his rule in all cases to be present at the first bath. He usually begins with a tub bath at a temperature five degrees below that of the patient. The temperature is then lowered two or three degrees at each repetition, which is commonly made at intervals of four hours, until 80° F. is reached. While the baths do well for children, he commonly employs wet thoracic compresses in adults as a substitute for the full bath. The rectal temperature is taken every hour when the patient is not asleep. So long as the thermometer registers over 100°, a compress made of three folds of old coarse linen is wrung out of water at 60° F. and wrapped around the chest, extending from the clavicle to the umbilicus. It should be long enough to lap over one inch in front, there being a slit for the arms so that it may rise easily to the clavicle without leaving rough folds in the axilla. This compress is smoothly wrapped round the chest and covered by a layer of thin flannel. The effect of such an application is to produce a local stimulating effect upon the cutaneous circulation. The arterioles contract, but quickly dilate again. The dilatation, however, is not like that under a warm poultice; the skin does not wrinkle and become cyanotic. The application overcomes that tendency to disturbance of the circulation which is described, by Romberg, in which there is diminished filling of the arterioles, commonly spoken of as heart failure. The improvement in nervous conditions favors elimination of the toxic products. The heart's action is increased and the respirations deepened. The cold compress, when it is localized, really becomes a poultice, soothing, relieving pain and dyspnea, but not relaxing the cutaneous vessels and elevating the temperature, as does the old-fashioned hot poultice.

Large Doses of Digitalis in Acute Alcoholism.—

Henry P. Loomis, in the *Medical News* of August 18, 1900, says that most writers are agreed that large doses of digitalis are very

well tolerated in acute alcoholism—indeed, these patients seem to be quite proof against digitalis poisoning. A. C. Wood believes that the explanatiou lies in the fact that the heart has become by long usage much benumbed to the habit of stimulants. The narcotic effect of the drug in these cases is explained by the cardiac stimulation, which increases the flow of blood to the nerve centers. The method has been infrequently employed in this country. The writer, while on service in the alcoholic wards of the Bellevue Hospital, used the tincture of digitalis in a series of ten cases of acute alcoholism. All classes of cases were subjected to the same treatment, namely, a few half-ounce doses of tincture of digitalis were given every four hours for three doses. If the patient became quiet and the delirium disappeared, the remedy was stopped before the third dose; if not, another series of three doses six hours apart was ordered. In the cases which showed the best results, not more than three doses were necessary. In only three of the ten cases were the results so pronounced that they could be attributed to the digitalis. In some the remedy was an absolute failure, and two patients died. As a result of his study of these ten cases, and six others treated a year ago, he comes to the conclusion that the indiscriminate use of digitalis in acute alcoholism is dangerous. Its administration should be restricted to strong, robust patients in early life, who are delirious, but have no complication. In these cases the remedy acts very favorably. They become quiet and go to sleep with a promptness and certainty that is not obtained by any other method. If after three doses no narcotic effect is noted, the remedy should be withdrawn. His failures were in chronic alcoholism in patients of advanced or middle life, and in anemic individuals with poor nutrition. A surprising effect noted in the cases in which the remedy acted favorably was the very brief convalescence. As soon as the patients wakened from the sleep induced by the drug, they were in a condition to leave the hospital.

The Treatment of Skin Diseases by the X-Ray.—

Josef Jutassy, in *Wiener Klinische Rundschau* of August 12, 1900, says the untoward effects of the *x*-ray have usually been observed by the dermatologist in its secondary results of inflammation and ulceration of the skin following its use for diagnostic purposes. The *x*-ray dermatitis resembles a burn, although there is very little pain from it, and after it a smooth scar is left, except in those cases in which the skin is deeply destroyed, when there may be a good deal of contraction. In severe cases the elastic fibers of the skin are

changed, there is destruction of the sweat and sebaceous glands and of the hair bulbs. The *x*-ray has been employed in treatment of lupus. Inflammation follows in the affected skin, and the lupus nodules become necrotic and are discharged, leaving a smooth, granulating surface which rapidly heals. The *x*-ray has also a specific action upon the bacilli in cases of tuberculosis of the skin. In chronic eczema the *x*-ray has been employed by Albers-Schonberg, Schiff, Ziemssen, and others. Occasional references to the treatment of psoriasis vulgaris are found in the literature.

The writer reports a case of chronic eczema of the hands treated by the *x*-rays with brilliant results. The patient was 29 years of age, and the backs of both hands had been affected with eczema for seven years. All the usual remedies had been employed without benefit. He was subjected to the action of the *x*-rays on July 25, the sittings being continued daily until August 3. The whole application of the rays comprehended a period of two and a half hours. This was followed by a reddish-brown appearance over the intact portions of the skin. A crust formed over the knuckles, which was treated by a one-half hour application of the rays. General dermatitis followed, which in turn was followed by a regeneration of the skin. The portions where the crust had formed were healed, a smooth white scar forming that gave no trouble. After thirteen months there was no return of the trouble.

Therapeutic Treatment of Cancer of the Stomach.—

Boardman Reed, in the *International Medical Magazine* for August, 1900, says that surgical means alone will give relief in cancer of the stomach. In order that this shall avail it is necessary to make the diagnosis when the disease is in its incipient stage, and this is very difficult. He advocates in doubtful cases an early exploratory incision, as it involves practically no risk when it is done by a skilful surgeon in a person who is well nourished.

The non-surgical treatment should consist of a bland, easily digested diet, with an effort to secure the best possible hygienic conditions, including moderate exercise out-of-doors, with rest after meals and general and abdominal massage. Weakened motility or propulsive power is always a symptom of advanced carcinoma, and this calls for small and relatively frequent feeding. In the majority of cases fresh milk will agree best. This may be given with one-twelfth or one-fourth part lime-water, according to the irritability of the stomach. Other foods for such cases are whites of eggs beaten up in water, well cooked gruels peptonized or not, whey, kumiss,

gelatin, the juice pressed out of lightly broiled steak, and vegetable purées. Any of the foods may be thickened by the addition of beef powder. In cases where there is less irritability and more digestive power, stale bread or toast and butter, crackers, fish, oysters, hash, lean meat, soft-boiled or poached eggs, thoroughly cooked cereals with milk or cream, and even the blander vegetables where the starch has been well dextrinized by cooking. All of these should be well masticated when eaten. As the disease advances, the ability of the stomach to empty itself lessens, and the amount of liquids taken by the mouth must be diminished. Toward the last the demand of the system for liquids may have to be met by injections into the bowels, and feeding in the later stages may be supplemented by nutrient enemata.

The Treatment of Dipsomania by Suggestion.—

J. M. Bramwell, in the *Quarterly Journal of Inebriety* for July, 1900, refers to the treatment of dipsomania by suggestion, but does not by any means limit its application to that form of inebriety. He defines dipsomania as periodical drunkenness; a period of total abstinence is followed by a craving for drink. At first this is strongly combated, but the resistance progressively decreases, and finally it is determined to satisfy the craving for liquor by just one glass. This, instead of stilling the craving, only increases it; there is a prolonged debauch, to be succeeded by a period of recuperation. It is in this form of periodical drunkards that the writer has found hypnotism to be particularly useful. It is not, however, applicable in all cases, and the result secured from the treatment is like other remedies, variable. A *sine qua non* is that the patient must be willing to be cured. Fortunately, most dipsomaniacs desire to overcome their craving, and in this they differ from the average inebriate. Many patients are not susceptible to deep hypnosis, but the author finds that quite as efficient results are obtained from the slight stages of hypnosis, or, indeed, when it can hardly be said that the patient is hypnotized at all. Treatment should begin at the beginning of the free period, and the suggestion should be directed toward weakening and retarding the next attack. Perseverance must be exercised, as many patients ultimately do well who relapse more than once during treatment. A distaste for alcohol is to be suggested, as well as abolishment of the craving for it. The patient should be made to understand that he must never look forward to being a moderate drinker, and the only opening for him is total abstinence or the gutter. When the treatment is begun, it should be contin-

ued for at least six months, and it would be well to have suggestion made at regular intervals for at least a year after the habit is given up.

Tincture of Opium in Intestinal Obstruction.—

J. W. Wainwright, in the *Boston Medical and Surgical Journal* of August 16, 1900, reports a very interesting case of intestinal obstruction. The patient, a boy five years of age, who was of active, nervous temperament, was suffering from intestinal obstruction, but there was no pain. There was an absence of bowel movement for forty-eight hours. Laxatives were administered, but no results obtained; at the end of twelve hours they were substituted by cathartics and enemata. There was no fever, tenderness, or nausea. Chloroform was then administered, and an enema given with a long, flexible rectal tube, combined with massage over the abdomen. The results were negative. At the end of this time ninety-six hours had elapsed since the last stool. At this time it was elicited from the patient that just before the obstruction a considerable quantity of cheese had been taken, which it was believed had lodged at the ileocæcal valve and caused the obstruction. Accordingly the patient was again anesthetized, placed with head downward, and a large enema given. At this time deodorized tincture of opium was given every two hours in two-drop doses, it being placed upon the tongue with a medicine dropper. This was kept up until there was complete coma with stertorous breathing. This condition was maintained for two hours. At the end of this time the patient was allowed to recover from the effects of the drug, which he did in about four hours, aided by a small quantity of tincture of belladonna. Upon gaining consciousness there was a free stool, in which was found a knuckle-shaped mass which proved to be cheese. The patient made an uninterrupted recovery.

The writer attributes the favorable action of the opium to the complete muscular relaxation, which the chloroform did not bring about. This relaxation extended to the coat of the intestines, thus allowing the mass to pass the ileocæcal valve.

Antistreptococcic Serum in Ulcerative Endocarditis.—

J. M. Clarke, in *The Lancet* of July 21, 1900, reports a case of ulcerative endocarditis with recovery. The patient's illness began November 4, 1899, with weakness, shortness of breath, and pain in the precordia. The usual treatment with salicylates was employed with no benefit, and on the 31st of December antistreptococcic serum

was employed. Injections of 10 to 20 cubic centimeters were used during January and until the 9th of February. During this time there was an improvement in all the symptoms. By the following May the patient had so far recovered that the only sign of the trouble was slight shortness of breath on exertion. There still remained a loud, blowing, systolic murmur accompanying the first sound of the heart. The author is inclined to think that he had a case of ulcerative endocarditis to deal with rather than one of rheumatism with pericarditis, because of the presence of a chronic valvular lesion on which an infective process is often grafted; the fact that the illness did not yield to the several salicylic compounds; the occurrence of a pulmonary infarct; the steady progress of the patient from bad to worse until the serum treatment was begun.

The antistreptococcic serum used was derived from four horses which had been immunized with cultures of streptococci obtained from patients suffering from (1) abscess; (2) ulcerative endocarditis; (3) puerperal septicemias. Two of the cultures had been exalted to a very high degree of virulence by passage through rabbits.

In the treatment of this case 232 cubic centimeters was used. The early injections were followed by marked local reaction lasting from thirty-six to forty-eight hours. After the first five or six injections there was general urticaria, which came on three or four hours after the injection.

A Case of Anthrax Successfully Treated by Local Injections of Pure Carbolic Acid.—

W. E. Fisher, in the *Therapeutic Gazette* of August 15, 1900, reports the case of a man aged 36 who eight days before admission to the hospital sustained a punctured wound of the left forearm. There was headache, a temperature of 104° F., and pain in the left arm, which was considerably swollen. The lymphatic glands of the axilla were not involved. Examination of the lungs and heart was negative. A few granular casts were found in the urine, with albumin. There were no nervous symptoms. Two days after admission there was no improvement, but an extension of the swelling toward the axilla. Several blebs of a reddish color, of irregular outline, appeared. These were punctured, a pale reddish fluid escaping. A temperature of from 103° to 104° was fairly constant and was not reduced by sponging. One drachm of 10-per-cent carbolic acid solution was injected around the eschar on the forearm. The following day the temperature fell from 104° to 102°, but rose again. The eschar on the forearm had increased in size. During

the day one drachm of pure carbolic acid was injected into, around, and beneath the eschar. The next day the temperature fell to 101°, and by evening to 100°. The palm had become very red, and clear vesicles were apparent at the elbow and wrist. The eschar had increased to the size of a silver dollar. The following day the temperature was normal, and there was a marked increase in the amount of urine passed. Albuminuria disappeared when the temperature reached normal, but a few hyaline casts remained. At no time was carbolic acid detected in the urine, though the patient had one injection of carbolic solution and six injections of pure carbolic acid of one drachm.

The Abortive Treatment of Bubo.—

H. M. Christian, in the *Therapeutic Gazette* of August 15, 1900, says that highly satisfactory results have been obtained by the abortive treatment of bubo. Successful application of the method depends upon its being instituted early, before suppuration has set in. Another condition is that it shall be due to gonorrhea, chancroid, or herpes, as tubercular infiltration of the gland is not influenced by the treatment. The treatment recommended by the writer consists in the direct application of the following ointment:

℞ Ung. hydrarg .....
Ung. belladonnæ .....
Ichthyol.....
Lanolin.....ää 3 ij.

The ointment is spread upon a piece of surgical lint, and applied directly to the swollen gland. Cotton is next laid over the gland, and the whole is held in its place by a spica bandage, with firm pressure. This treatment is carried out every day until resolution takes place, which is usually accomplished in from ten days to two weeks. Twenty buboes have been treated in this manner, of which twelve were successfully aborted. Eight of the cases followed gonorrhea and four chancroid. Of the eight cases where the abortive treatment failed, six were cases of tubercular adenitis. The result of this treatment has convinced the writer that fully 50 per cent of buboes other than tubercular can be successfully aborted by this treatment, provided only that it be employed before the formation of pus.

Secondary Hemorrhage Following the Use of Suprarenal Extract.—

F. E. Hopkins, in the *New York Medical Journal* of August 25, 1900, calls attention to the frequency with which secondary hemorrhage takes place after the use of suprarenal extract in intranasal

operations. He gives a brief report of three cases, and says that many others might be added which tend to show that the secondary relaxation which comes on from four to six hours after the operation predisposes to hemorrhage. He has written to a number of rhinologists, and he finds that many of them have experience in accord with his own.

J. L. Goodale writes: "After using cocaine and suprarenal extract in something over 100 intranasal operations during the past year, I have come to regard the hemorrhage occurring during the subsequent period of relaxation as always greater than would have occurred under cocaine alone. This fact has seemed more marked in operations upon the turbinates than in those upon the septum."

L. E. White reports that he has had such trying experiences with the secondary hemorrhage that he has abandoned the use of the agent in operations, preferring to have the bleeding at the time of the operation. The latter observer has used the suprarenal extract extensively in acute swelling of the mucous membrane, always with a gratifying primary effect. The latter is to a certain extent permanent—that is, the relaxation following the congestion is rarely as great as at the time of the application. A repetition of the treatment at intervals of twenty-four hours usually induces a steady advance toward complete recovery.

A New Mechanical Support in Gastroptosis.—

H. W. Lincoln, in the *Medical News* of September 1, 1900, describes a new method of support in Glénard's disease. In the treatment of this condition all pressure at the waist should be removed, as this aggravates the abnormality. He has not found the various abdominal bandages so freely offered in the market to be very satisfactory, even when they are supplied with an extra pad for the special support of the kidney. The tendency of all of these devices, unless laced too tightly, is to slip upward, thus adding to the pressure which it is desired to avoid. The writer's support is a piece of adhesive plaster thirty-six inches long and either seven or twelve inches wide, sufficient to encircle the abdomen and overlap at the back. From one corner to the other, along the length of the strip, a circular cut is made which separates two three-cornered pieces of just half the length of the slip of plaster. The long piece is applied tightly around the abdomen above the pubis, overlapping the back. The triangular slips are fastened in front. The broad ends overlap each side of the middle line and the smaller ends pass around to the patient's back. This method forms an equable

support with immediate relief to the dragging sensations, nausea, vertigo, etc. A plaster applied in that way may remain from five to ten weeks, depending upon the amount of irritation which it excites and the amount of perspiration. He has used the support in over fifty cases in hospital and some thirty cases in private practice. He recalls only two out of this number in which the support was not satisfactory.

Ninety-five-per-cent Carbolic Acid in Chronic Suppurations About the Mastoid and Middle Ear.—

W. C. Phillips, in the *Medical Record* of August 25, 1900, gives a further report upon the use of this remedy. In September, 1899, he reported six cases, and since then he has had a wider experience in both private and hospital practice. In these later cases he has used it upon denuded surfaces after removal of the ossicles, and also in burrowing pus sacs accompanying mastoid suppurations. Some of these extended well down into the sternocleidomastoid muscle, and others burrowed downward and backward upon the external surface of the cranium. After emptying the pus cavities freely, the acid is applied upon a cotton swab. In his later operations he has allowed the acid to remain a somewhat longer time in contact with the tissues before using the alcohol. It is sometimes allowed to remain in contact with the tissues for from thirty to sixty seconds. In none of the cases in which this treatment was employed was it necessary to do an operation for secondary abscess. He quotes the experience of Dr. Parker, of the Manhattan Eye and Ear Hospital, who has used carbolic acid followed by alcohol in about twenty cases. The latter has noted a lessening of the discharge in cases where other cauterizing agents had failed. Areas of necrosed bone have taken on a healthy healing process, sluggish granulations have been stimulated to healthy activity, and in many cases secondary operations have been avoided. It has been particularly valuable when used by means of the spray; with the latter method many cases of persistent discharge from the middle ear have been relieved.

Aortic Aneurism Treated by Electrolysis.—

H. A. Hare, in the *Therapeutic Gazette* of August 15, 1900, reports a third case of aneurism treated by the introduction of gold wire and electrolysis. The aneurism was first noticed by the patient as a small tumor at the junction of the third costal cartilage with the rib on the left side, January 1, 1899. It was firm and painful. At the time of operation the tumor had increased to very considerable proportions, extending from the left border of the sternum to

the midaxillary line. The first operation was performed by Professor Keen, who introduced ten feet of gold wire into the outer quadrant of the aneurism, and a current of thirty-five milliamperes was passed for one hour. Seven days later ten feet of gold wire was introduced and the electrolysis continued as before, the wire being coiled on the inner side of the growth. Four gelatin injections of thirty centimeters each were given in the next few days, but twelve days after the operation the patient died of pulmonary edema with respiratory failure. On post-mortem examination a large mass or clot corresponding to the protuberance on the chest wall was found. This was a false aneurism, not being covered by a distinct wall, the arterial wall having undergone pressure atrophy and disappeared.

Quinine in the Treatment of Cancer.—

M. Jaboulay, in the *Independence Médicale* of August 8, 1900, describes the case of a patient who had a cancerous growth in the upper portion of the left breast which had been growing for about three years. At the time the patient came under observation the skin over the part was tense, the surface was dark red, and the tumor had every appearance of commencing ulceration. The axillary and periclavicular glands were involved. Injections of quinine into the tumor were begun, from ten to twenty grains being thrown daily into the substance of the tumor, the treatment being continued for about ten days. At the end of that time the tumor was shrunken, was of normal color, the skin over the surface was wrinkled, and the glands had diminished. The writer says that this patient was one out of a number who had obtained marked relief from quinine solutions injected into the substance of the tumor.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Rheumatism in Children.—

David B. Lees, in the *Clinical Journal* of August 8, 1900, says the change that is going on in our conception of the disease known as rheumatic fever has been largely brought about by the study given to this affection in children's hospitals. Rheumatism as it occurs in adults has been described as an arthritis, with occasional cardiac complications. In these cases, however, the most obtrusive symptom is not the most important. In the rheumatism of childhood the arthritis is a minor symptom and may be entirely

absent; if present it is generally an insignificant symptom with but little swelling, pain, or tenderness. An inflammation of one or two joints is frequently all that is noted. Children may be quickly killed by a rheumatic attack, while fatalities in adults from this disease are comparatively rare. Sturges reported twelve deaths out of sixteen cases of severe carditis in children. This shows the gravity of the heart complications in childhood. In addition to the large primary mortality, there is an enormous amount of chronic heart disease caused by rheumatism in childhood. Many of the cases of rheumatism in children which survive have their hearts so severely crippled that they are deprived of many years of life. They never entirely recover, are incapable of much exertion, and die young. Too much attention has been paid to the endocardium and pericardium, and too little to the condition of the heart muscle, in the rheumatic complications. The reason of this is that the stethoscope gives so little knowledge of the condition of the heart muscle. Too often the physician is content to simply use the stethoscope, and if there is no murmur he is satisfied. The heart should always be examined first by inspection, next by palpation, and finally by percussion, before the stethoscope is used. Especially ought the cardiac dulness to be carefully ascertained, and the space to the right of the sternum at the level of the fourth rib should be carefully percussed to ascertain if there is an extension of cardiac dulness to the right of the sternum. If the rules regarding the percussion of the heart are carefully observed, usually in acute rheumatism where there is slight pyrexia there will be nearly always a certain amount of dilatation of the heart, the latter being especially marked in the left ventricle. There is feebleness and diffusion of the cardiac impulse with feebleness of the first sound. These cardiac symptoms commonly disappear at the end of the pyrexia, but in some unfavorable cases they may remain permanently. Many cases that are diagnosticated as pericarditis with effusion are simply cases of cardiac dilatation. Sir William Gull was the first to teach the frequency with which dilatation was mistaken for pericardial effusion.

Local Anesthesia of the Spinal Cord During Labor.—

One of the most interesting papers read before the Thirteenth International Medical Congress was that of Tuffier, who gave a *résumé* of 125 cases in which operations were performed upon the bladder, rectum, uterus, the legs, the perineum, and the intestines. The dose employed by him was 1½ centigrammes of cocaine.

With this he always obtained the desired anesthesia. Pitesci had used the same method in 125 cases; in four of these anesthesia failed. In 100 cases, seventeen had no untoward symptoms, eighty had light symptoms of intoxication, and three showed critical symptoms. The dose employed was from two to four centigrammes. Severeann also noted alarming symptoms; the dose which he employed varied from one to four centigrammes.

E. Bumm and C. Kreis, in *La Semaine Médicale* for July, 1900, have reported cocaine injections into the spinal cord in six cases of labor. Following these observers S. Marx (*Medical News*, Aug. 25, 1900) has a preliminary report on a few cases, but he feels justified in affirming that in lumbar anesthesia we have a method of producing analgesia without danger to mother or child. He has not seen severe complications, but disagreeable features have followed. None of his patients escaped nausea headache, there being a fulness in the head and an increased pulse with elevation of temperature. These, he says, are not due to sepsis, but probably to alterations in intraspinal pressure. In one case in which salt solution was used by mistake, the labor pains were not influenced by the injections, but all the disagreeable after-effects were the same. These are readily controlled by the use of $\frac{1}{100}$ of a grain of nitroglycerin. During labor the abdominal muscles were never reflexly contracted, providing the anesthesia was complete. Voluntary control of these muscles was never lost, and they could always be brought into play upon command.

The method of making the injections is as follows: The patient's back is thoroughly scrubbed and the patient placed on the side with the spine flexed. A small hypodermic syringe is employed which has been boiled for ten minutes. The needle is about ten centimeters in length. The thumb is placed on the fourth lumbar vertebra, and the needle is inserted one-half inch in front of and just outside the edge of the thumb, its direction being from below upward and from without inward. The point is then pushed slowly and gently onward until the spinal fluid is seen running out. Ten minims of cocaine solution, representing one-sixth of a grain, is now injected, and the needle withdrawn. The writer reports five cases, several of which were complicated, necessitating version. As to the probable results that are to occur from this method, the author has little to say, merely remarking that in his somewhat limited experience he apprehends no danger. Too short a time has elapsed since he began the method to enable him to state whether there are or are not unpleasant consequences to be apprehended.

A New Incubator Employed in the Children's Hospital at Graz.—

Theodore Escherich, in the *Albany Medical Annals* for September, 1900, says that an uncommonly large percentage of infants admitted to the Anna Kinderspital are weak or premature; forty-five out of sixty-five weighed less than six and one-half pounds. For these premature infants various models of incubators were used, the best one being the *Lion couveuse*. Such an incubator is troublesome for the nurse. The disadvantages of the incubator led the writer to construct what he calls an incubator room to take the place of the single incubators. This was constructed of a size to accommodate several infants, and allowed the nurse and attendants to enter. The dimensions are 6½ x 8½ x 4 feet. The necessary amount of heat is furnished by a coil of hot-water pipes connected with the ordinary heating apparatus of the house. The temperature is regulated by electric thermostats, and abundant ventilation is provided for. A sojourn in the incubator is indicated for all weak and premature infants and those who suffer from abnormally low body temperature. Special arrangements have been made in this incubator to secure a certain degree of moisture, which the writer thinks of great importance in preventing the catarrhal complications of the respiratory tract so common in young children. Especial care must be exercised to prevent infection, as the warm moist air of the incubator is very favorable to the development of micro-organisms.

The Value of Diphtheria Antitoxin.—

Two very important papers have been contributed to this subject recently. One was the chairman's address before the section on diseases of children at the meeting of the American Medical Association in June, 1900 (*Journal of the American Medical Association*, Aug. 1, 1900), and the other a paper by F. Siegert published in the *Jahrbucher für Kinderheilkunde*, lii, 56. The object of Edwin Rosenthal's investigation was to place the ethical standing of diphtheria antitoxin upon a secure foundation. This seemed to him especially important, as the pharmaceutical convention held at Washington lately voted down the proposition to embody in the next edition of the Pharmacopœia a test for antitoxin. He sent a letter to a number of physicians, of whom 673 replied. Of these, 622 were favorable to antitoxin, twenty-six expressed no opinion, and only five were opposed to it. The total number of cases reported was 12,375, the recoveries being 11,727, a percentage mortality of 5.23. These

results are but an affirmation of what is generally believed, but they teach that antitoxin still retains its position, and that the results are not different from what they were at the beginning. He has corresponded extensively with the health officials of both foreign and American cities, and has found the mortality to be 38.4 per cent in 183,256 cases before the antitoxin period. The mortality in 132,548 cases since the antitoxin period was 14.6 per cent. Siegert especially studied the hospital treatment in Germany, Austria, Hungary, and Switzerland. The period chosen for the inquiries covered the statistics of the hospitals from 1890 to 1898, the first four years of this period representing the preantitoxin period, and the latter four the time since the introduction of the remedy. Errors in diagnosis, which have been claimed to play such an important rôle in the antitoxin statistics, were in part eliminated by having the reports made separately in operative and non-operative cases. It was believed that in the operative cases the disease must of necessity have presented a certain degree of severity. As a result of the study of his figures he comes to the conclusion that of forty ordinary cases of diphtheria that would die under the usual methods of treatment, twenty-five are saved by the antitoxin. In the severest operative cases it is found that antitoxin saves twenty-four out of every sixty.

Quite as decisive an answer is returned as to the necessity of operation in cases treated by antitoxin. Of forty-six cases requiring intubation or tracheotomy in the preantitoxin days, at least nineteen are saved the necessity of such intervention.

Lumbar Puncture.—

A recent discussion before the pediatric section of the New York Academy of Medicine on lumbar puncture followed the reading of a paper by W. P. Northrop on this procedure in meningitis (*Archives of Pediatrics*, August, 1900). The diagnosis of meningitis is comparatively easy where lumbar puncture is employed. In fifty-five cases of lumbar puncture, the peculiar diplococcus of this affection was found in thirty-eight. The number of germs found was much less in the early stage of the affection. The fluid withdrawn from the spinal canal was most turbid early in the disease. The author had employed lumbar puncture in thirty cases, and had never seen any ill effects from the procedure.

L. A. Connor discussed the technique of lumbar puncture. He said that any one of the three lower lumbar spaces might be chosen. The lower the puncture is made, the richer in sediment. The opera-

tion should be made with the patient in the sitting position, unless there is delirium or a comatose condition. It is essential to remember that the greatest degree of flexion of the spine should be maintained. If the child is sitting, it should be bent well forward; the operator should stand on the right side of the patient and bend over the body. General anesthesia is unnecessary in most cases. The skin may be rendered less sensitive by the use of cocaine. The same care should be exercised to avoid sepsis as is used in opening other serous cavities. The landmarks are easily ascertained by counting the spinous processes from the twelfth dorsal, to which is attached the last rib. This structure is easily ascertained. A line across the highest points of the iliac crests passes just above the fourth lumbar spine. An antitoxin needle is best in children.

When the desired space is located, the needle is introduced a little to one side of the median line, its point being directed upward toward the median line. With the patient horizontal the fluid comes out drop by drop, while in the upright position it comes away in streams, sometimes spurting quite a distance. The amount of fluid removed depends largely upon circumstances. If for diagnosis, it is necessary to remove not more than ten or fifteen centimeters; as a therapeutic agent it may be necessary to remove more.

A. Caille said he had performed the operation seventeen times; the only therapeutic result noted was in relation to pressure. He thought spinal puncture was justifiable in some cases as a diagnostic measure, but as a remedy he had no confidence in it.

Koplik's Spots in the Diagnosis of Measles.—

J. L. Hirsch, in the *Philadelphia Medical Journal* of August 25, 1900, says that four years has elapsed since the publication of Koplik's original paper, but with the exception of a few scattered publications in this country and abroad there has been very little reference to it in the literature. His personal observations extend over two and a half years. He has examined the mouths of a great many children in this time, and has seen between forty and fifty cases of measles. In every case in which the child was seen before the spots began to fade, Koplik's spots were noted. He has found spots most numerous on the buccal mucous membrane and sometimes limited to it; occasionally they are noted on the lips. Especially is the sign of value in the diagnosis of measles in colored children. The older view that a diagnosis of measles cannot be made before the appearance of the skin eruption no longer holds good. By this new sign we can easily diagnosticate measles from one to five days before the

cutaneous outbreak. The writer regards the sign as absolutely pathognomonic, as it is not present in any other condition of health or disease, and the spots are invariably present from five hours to ten days before the appearance of the rash. The number of the spots bears no relation to the severity of the attack.

Kernig's Sign.—

In a discussion before the Philadelphia Pediatric Society (*Pediatrics*, Aug. 15, 1900) D. L. Edsall said he had seen but one case in which meningitis was proven to have been present, with Kernig's sign absent. The sign was looked for every day for about six weeks, and the autopsy showed a marked internal hydrocephalus with tubercular meningitis. That the sign may be present where there is no meningitis was shown by a boy six years of age, who had high temperature and violent delirium at first, which later showed a typical course of typhoid fever. This sign was present and was very marked from the beginning of the illness to the convalescence. He had no other signs of meningitis.

Alfred Stengl also reported two cases of meningitis in which this sign was absent. F. A. Packard said that this sign is not a simple inability to extend the leg on the thigh. Kernig stated that with the child sitting up and the thigh flexed upon the abdomen, it cannot extend the leg, although it could do so when lying down. He has seen during the last year a number of cases of meningitis where the rule was reversed—that is, the leg would be extended while the patient was sitting up, while there was an inability to do so while the patient was lying down. He believes it is a valuable sign when other symptoms are not marked.

Perforation of a Tuberculous Bronchial Lymph Gland into the Trachea.—

A. Caille, in *Archives of Pediatrics* for August, 1900, reports the case of a four-year-old girl who died suddenly. She was admitted to the hospital with a diagnosis of bronchitis. There was no elevation of temperature, no pain, no dyspnea, and the heart and kidneys were normal. A few râles could be heard on auscultation over the sternum. On the morning following her admission she was playing with other children in the ward, when she suddenly complained of pain in the neck and became cyanotic. A large caliber O'Dyer tube did not relieve the dyspnea, and a low tracheotomy was performed, also without giving relief. At the autopsy both bronchi were found plugged with a cheesy material which came from an abscess cavity situated above the bifurcation of the trachea, and which had per-

forated and ruptured into the trachea. As long as the child was under observation there were no symptoms pointing to such a condition. At the February, 1900, meeting of the American Pathological Society two similar cases were reported.

The Results of Operation for Cancer of the Uterus.—

Dmitri De Ott, in *La Presse Médicale* of August 4, 1900, says that the only successful method of dealing with a cancer of the uterus is to remove the organ. The results are largely dependent upon an early diagnosis. The removal of the entire organ gives the maximum guarantee of cure, no matter what part or to what extent the organ is involved in the cancerous process. The removal of the lymphatics and retroperitoneal glands is not justified theoretically nor by clinical results. The extirpation by the vaginal route is the preferable operation. The mortality was 1.6 per cent, but it was rarely the direct result of the operation. One thousand operations showed that thirty had remained more than five years without recurrence. Four of these had gone ten years without recurrence, three nine years, one eight years, three seven years, six six years, and thirteen five years.

Congenital Elephantiasis.—

J. E. Dube, in *L'Union Médicale du Canada* for June, 1900, reports the case of a baby of two and a half months presenting a marked deformity of the right leg. The child was born after a labor lasting about two hours, in which it was necessary to use forceps. The mother is 33 years old, has good health, and the father is 36. In the family there is no history of deformities, and the affected child was the seventh. At the time of birth the right leg was very large, and it continued to grow. The tissues are not edematous, and the enlargement extends from the foot to the groin. Aside from this enlargement of the leg the child is well.

FORENSIC MEDICINE.

Medicolegal Aspects of the Roentgen Rays.—

Carl Beck, in the *Medical Record* of August 25, 1900, says that severe burns in the taking of skiagraphs should be very exceptional, as he has made over three thousand exposures since 1896 and has never observed the slightest irritation of the skin. In only two

cases did depilation take place, one upon the fifth and the other upon the sixth day after exposure. The chief difficulty in the interpretation of the *x*-ray pictures is caused by the fact that they are shadows, and to interpret them properly a thorough knowledge of anatomy is requisite. Of especial importance is it to have a knowledge of the non-pathological abnormalities. While it is easy for a layman to understand the significance of most skiagraphs, there are injuries the correct interpretation of which presupposes great care and a vast amount of experience. The skiagraph is not always an accurate method of determining the functional disability. In some cases the *x*-ray pictures may show quite a striking deformity with functional usefulness; again there may be great impairment of function with comparatively little deformity as shown by the *x*-ray examination. The greatest difficulties in accurately interpreting skiagraphs occur in fractures about and into joints in which there is a considerable formation of callus. In the interpretation of skiagraphs in children, it is important to remember that for a considerable period the bones are cartilaginous. In fractures it is generally desirable to take at least two pictures in different planes. The obliquity of some fractures prevents their giving any shadow at all in certain positions, so that if but a single exposure is made, it might be stated that there was no fracture, when if the part were posed in a different position the break in the bones would be shown distinctly.

Antidote for Carbolic Acid.—

D. H. Conally, in the *Southern Practitioner* for September, 1900, reports a case of a child two years old who took about a half-ounce of carbolic acid mixed with an ounce of glycerin. The mixture had been prescribed as a local application. Soon after the dose was taken convulsions supervened, which recurred in rapid succession, at least a half-dozen having occurred before the physician's arrival. He immediately administered two fluidounces of cider vinegar every hour until three doses were taken. Nothing else was given except plain water to relieve the thirst, and the following morning the patient was about as usual. The antidotal effects of alcohol are now conceded, and this short note of Dr. Conally would seem to show that ordinary cider vinegar has the same effect. It would be interesting to learn if the antidotal effect is due entirely to the acetic acid contained in the vinegar. It is of practical value, as alcohol or whiskey may not always be available, while vinegar is almost always obtainable.

Rupture of the Perineum in Coitus.—

R. Abrahams, in the *Philadelphia Medical Journal* of August 11, 1900, reports the case of a woman 26 years of age, who prior to a recent marriage had enjoyed perfect health. She had never suffered from a uterine or rectal disorder. At the first intercourse the hymen was ruptured; from this time cohabitation was at regular intervals of about one week. The last coitus was attended with "some little pain," and considerable bleeding. The following morning the patient was surprised by the escape of feces from the anus, but also from a point near the vulva.

On examination the genitals were found well developed and perfectly normal. The perineal body was torn nearly across; the rupture was complete, with very little laceration. The finger introduced into the opening entered the rectum. There was no communication between the rectum and vagina or between the vulva and rectum.

The case is almost unique in the record of genital injuries. It is especially noteworthy from the remarkably few subjective symptoms which followed so serious an injury.

Medicolegal Relations of Opium Inebriety.—

T. D. Crothers, in the *Journal of the American Medical Association* of August 19, 1900, says that there is an increasing number of cases of opium addiction associated with crime. Medical experts and judges hesitate to recognize irresponsibility from opium taking alone, and attempt to explain the phenomena by other theories. Opium habitués frequently commit crimes perhaps without adequate motive. The effect of opium upon the higher brain centers is to impair the distinction between right and wrong. Associated with this is a derangement of the sense perceptions, by which the reason is still further impaired. Opium takers are incapacitated for executing bills or making contracts, and often do not comprehend the ordinary domestic and social relations. The writer is of the opinion that in these cases there is a degree of insanity and legal irresponsibility which should have recognition.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

EXAMINATION OF THE STOMACH CONTENTS WITH RESPECT TO DIGESTIVE FERMENTS AND DIGESTIVE PRODUCTS.[1]

BY FREDERICK A. McGREW, A.B., M.D., DAVIS, ILL.

II. DIGESTIVE FERMENTS.

Saliva.—Reaction..... Quantity secreted in 5 m. =.....minims.
1 m. converted 1 gr. of starch in..... .....minutes.
Rennin.....Rennin zymogen.....1 drm. of neutral filtrate coagulated 1 drm. of raw milk in.....m. at temperature..... Loses activity in 1 to.....dilution.
Pepsin.....Pepsinogen.....Disc. of egg-albumen digested in pure filtrate in .....m., at temperature.....; in HCl filtrate in.....m.; in HCl and pepsin filtrate in.....m. Loses activity in 1 to.....dilution.

SALIVA.

The following simple experiments are intended only to give familiarity with the color reactions. It is important to identify the colors positively, else confusion is likely to result.

The following solutions are required:

No. 1, starch solution. Rub up 32 grains of corn-starch with 1 drachm cold water to a paste. Add slowly, stirring meanwhile, 8 ounces of boiling water, and boil the whole for eight or ten minutes. When cool, filter. This standard starch solution contains 1 grain starch to 2 drachms.

No. 2, iodine solution. Make a one-per-cent solution of iodine crystals in distilled water, adding sufficient iodide of potassium to dissolve the iodine, about 30 grains to the ounce.

No. 3, cupric sulphate-caustic soda solution. Dissolve 40 grains of clear crystalline sulphate of copper in 8 ounces distilled water and filter. This should be kept in a separate bottle from the other solu-

[1] This is the second of a series of four papers on "Examination of the Stomach Contents," the first having appeared in the October number of MEDICINE.

tion, which is liquor sodæ, the official five-per-cent solution of caustic soda.

Experiment 1.—To a little of the starch solution in a test-tube add a drop or two of iodine solution. The color reaction is dark blue.

Experiment 2.—To a couple of drachms of the starch solution in a test-tube add 20 to 30 minims of saliva from the mouth. Stand the tube in tepid water for ten minutes; then test a portion of the contents as in Experiment 1, and observe that there is a yellowish coloration or none at all. The starch has been changed to achroodextrin or to maltose.

Experiment 3.—To another portion of the contents of the tube add twice as much caustic soda solution and a few drops of copper sulphate solution. Boil the upper stratum and contrast the yellowish-red coloration with the bluish below. The maltose present gives the yellowish-red reaction. This is Trommer's test for sugar.

Experiment 4.—Add about twenty minims of saliva, diluted with three or four times as much water, to two drachms of the starch solution in a test-tube, and stand the tube in tepid water. At intervals of one minute pour a few drops upon a porcelain plate, and touch it with a drop of the iodine solution. Observe that the color reaction, at first intensely blue, becomes purple, then reddish-brown, then brown, then brownish-yellow, then yellowish, and finally there is no color reaction at all. The red-brown color signifies that the starch has been changed to erythrodextrin, the purple is due to a mixture of starch and erythrodextrin, while the disappearance of the color with iodine indicates that all the dextrin has become achroodextrin; and on testing with the cupric sulphate-caustic soda the yellowish-red upper stratum will show that part of the starch has been changed to maltose.

At a convenient time and place, perhaps just before the stomach contents are withdrawn, a quantity of the patient's saliva may be secured for examination. To stimulate the flow of saliva let him chew upon a rubber band or such other insoluble substance.

The digestion of carbohydrates is a normal process within the stomach, and is due to the salivary ferment. "Starch indigestion" is not uncommonly met with; and while likely causes will be found in rapid eating, incomplete mastication, and hyperchlorhydria, a trio which not infrequently travel in company, yet, too, the quantity and quality of the salivary secretion itself become a proper subject of investigation.

Ascertain the *quantity* of saliva secreted during a period of five minutes. This should be from one to two drachms. Test the reaction by litmus; it should be faintly alkaline.

Dilute the saliva to ten times its volume, and mix ten minims of the dilution with two drachms of the starch solution in a test-tube. Dilute the ten minims with two or three volumes of water for the sake of convenience. The tube will of course contain one minim of saliva and one grain of starch.

Stand the tube in tepid water, which may be tested with an ordinary fever thermometer. It should be 100° F., but two or three degrees above or below will make no practical difference in the changes. At intervals of five minutes test the contents as in Experiment 4. When the yellowish coloration fades or disappears the starch has been converted, and maltose will be present. The minutes required to effect the conversion should be noted.

If it is desirable to shorten the process use 20, 30, 40, or 50 minims of the diluted saliva; but whichever may be adopted, stick to that as a standard. If 20 minims be used, test every four minutes; if 30, every three minutes; if 40, every two minutes; if 50, every one minute.

Filtering the diluted saliva is a refinement of the technique. It is not absolutely necessary.

RENNIN.

Experiment 5.—To one drachm of raw milk in a test-tube add a couple of drops of rennet; set in a water-bath at 100° F., and notice that the whole mass becomes solid, so that the tube may be inverted without the escape of the curd. Later the curd contracts and the whey is squeezed out.

To one drachm of raw milk in a test-tube add one drachm of filtrate of the stomach contents, which has been previously neutralized by the addition of liquor sodæ, drop by drop, until it does not change litmus. Stand the tube in a water-bath at 100° to 104° F., and examine at intervals of one minute. It is curdled perfectly when it is solid and will not pour.

A room temperature may be adopted, but examination for any of the digestive ferments is more satisfactory when a uniform temperature is taken as a standard. And the changes take place so much more rapidly at the higher temperature that, for convenience, it will ordinarily be adopted.

Dilute fifteen minims of filtrate to one drachm and add to raw milk, and test the dilution under the above conditions. Increase

the dilution five, ten, fifteen, twenty times, until the rennin ferment loses its activity.

The physiological value of the rennin ferment is not well understood, but its strength in any specimen seems to follow closely the pepsin strength. Examination for it therefore has some value as an indicator.

PEPSIN.

No. 4, 0.2-per-cent solution hydrochloric acid. Add 47 minims of hydrochloric acid, c. p., to 15 ounces 5 drachms of distilled water. The solution contains two parts in a thousand, conforming to the acid strength of normal gastric juice.

No. 5, pepsin solution. Dissolve 16 grains of pepsin, free from peptone and of the standard digestive power 1:3000, in 1½ ounces distilled water, and add ½ ounce of glycerin. The solution contains one grain to one drachm.

Experiment 6.—Cut the thinnest possible shaving with knife, scalpel, or razor from the white of a hard-boiled egg. From the most transparent section of this cut out an oblong piece, and divide it into three equal parts, each of which should be at least .1 x .2 inches. Prepare three tubes. In No. 1 put one drachm HCl solution and one of the egg-albumen shavings. In No. 2 put one drachm of HCl solution, three minims pepsin solution, and another of the shavings. In No. 3 put one drachm HCl solution, fifteen minims pepsin solution, and the third shaving. Put the three tubes in a water-bath at 100° to 110°. Examine and agitate them at intervals of ten or fifteen minutes. No. 3 rapidly dissolves, and within thirty minutes to one hour, according to the thinness of the section, has disappeared. No. 2 more slowly disappears. No. 1 remains unchanged.

In each of three test-tubes put one drachm of the pure filtrate of the contents under examination. Let A contain only the pure filtrate. To one of them, B, add one drachm HCl solution, and to another, C, one drachm of HCl solution and twelve to fifteen minims pepsin solution. In each put a shaving of egg-albumen prepared as given in Experiment 7, and put the three tubes in a water-bath at 100° F. Examine and agitate them at ten-minute intervals. Some valuable conclusions may be drawn regarding the digestive capacity of the gastric juice under examination. If the shaving is dissolved with equal rapidity in each tube the filtrate has sufficient digestive power. If B and C dissolve in the usual period, but the one in the pure filtrate A dissolves but slowly or not at all, the pepsin-ferment is present in sufficient quan-

tity, but the HCl must be insufficient. If the shaving in C disappears, while both A and B remain little or not at all affected, both HCl and pepsin must be deficient or absent. If pepsin is found to be present, the pure filtrate may be diluted two, five, ten, fifteen, or twenty times, as necessary, with HCl solution, in order to find the dilution in which activity is lost. The pepsin strength may thus be comparatively estimated.

III. DIGESTIVE PRODUCTS.

Amylolytic.—Color reactions: Lugol's.....Trommer's.....
Starch.....Dextrin.....Maltose.....
Proteolytic.—Acid-albumin.....Propeptone.....Peptone.....

AMYLOLYTIC.

Test the pure filtrate for starch and erythrodextrin by means of solution No. 2 of iodine (Experiment No. 4). Test for the presence of maltose by means of the cupric sulphate and liquor sodæ solutions, No. 3. If the upper stratum on boiling yields a yellowish-red coloration maltose is present (Experiment No. 3).

PROTEOLYTIC.

The production of peptone from proteid is reached in three stages. Proteid is first changed to acid-albumin; that to propeptone, of which there are several kinds; and propeptone is finally changed to peptone, the product of completed gastric juice digestion.

Experiment 7.—Stir raw white of egg vigorously in a graduate with a stirring-rod or in a mortar to disintegrate the membranes. Add nine volumes of water and shake vigorously. Then strain through muslin or cotton. To some of this 10-per-cent egg-albumen solution add one and one-half volumes of 0.2 per cent HCl solution. At once boil a little of this 4-per-cent HCl-egg-albumen solution. It coagulates.

Experiment 8.—Into one drachm of it drop two drops of cupric sulphate solution No. 3, and then fifteen to twenty drops of liquor sodæ. A *faint purple* coloration results, which deepens on the addition of more of the copper sulphate. This is known as the "biuret" test for proteids.

Experiment 9.—Set a test-tube containing more of the HCl-egg-albumen, to which some pepsin solution No. 5 is added, in water at 100° to 110°. Boil a little of it after ten minutes, and note that it does *not* coagulate. It has been changed to *acid-albumin*. Drop a drop of liquor sodæ into it, and there is a cloudy precipitate of acid-albumin, which may all be thrown down by perfectly neutralizing

the solution. After half an hour boil more of it; it does not coagulate. Add liquor sodæ; it is not precipitated by neutralization. It has been changed to *propeptone* and *peptone*.

Experiment 10.—Repeat the "biuret" test given above, adding to one drachm two drops of cupric sulphate solution No. 3, and then fifteen to twenty drops of liquor sodæ. Instead of a faint purple coloration, a *light pink* or *rose* coloration appears, the reaction given by propeptones and peptones. Adding more copper sulphate produces a *violet* or *purple*. If a little of the untreated solution be saturated with ammonium sulphate, the propeptone will be precipitated.

Heat a portion of the filtrate of stomach contents in a test-tube. If unchanged proteids soluble in water or dilute acid are present, they will be coagulated. If no coagulation occurs all the proteids present have been changed to acid-albumin, propeptone, or peptone. Neutralize the acidity of the filtrate with some diluted liquor sodæ until it does not change litmus; if *acid-albumin* be present it will be precipitated from the solution.

To test for peptones take one drachm of the pure filtrate in a test-tube and into it drop two drops of the cupric sulphate solution, shaking to mix. Then add about half a drachm of liquor sodæ. If peptones are present a *light pink* or *rose* color appears, which changes to a *purple* on adding more of the copper solution. This is known as the "biuret" test for peptone (Experiment 10).

Since propeptone gives the same reaction, if it is desired to test for this less complete product of digestion, add crystals of ammonium sulphate to saturate the filtrate. If propeptone be present it will be precipitated. The remaining solution may then be tested for peptone. Commonly both propeptone and peptone are found together in varying amounts according to the digestive power of the gastric juice, and the period of digestion.

While the description of the method of testing for the digestive products involves a considerable amount of lengthy detail, the process itself is in fact very simple, requiring but a moment or two of time. A drop of the filtrate in a porcelain dish, and a drop of the iodine solution brought in contact with it, determines the presence of starch or dextrin. A drachm of the filtrate, to which two drops of cupric sulphate solution and then liquor sodæ are added, determines the presence of peptone. More cupric sulphate solution and the upper stratum boiled, determines the presence of maltose. This gives all the information regarding the digestive products required by the practical analyst of stomach contents.

MULTIPLE OSSIFIED ECCHONDROSIS AND EXOSTOSIS OF THE TRACHEA AND LARGER BRONCHI.[1]

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(From the Pathological Laboratory of Rush Medical College.)

The presence of bony and cartilaginous growths in the mucous membrane of the trachea has always been of interest, not only on account of their rarity, but also from the question whether they should be regarded as processes of a chronic inflammatory nature or be classed under the true tumors. Of the fourteen recorded cases the writers are almost equally divided in their opinion; only a few observers have found any connection between the new growths and the tracheal cartilages. Wilks,[1] Steudener,[2] Chiari,[3] Denig,[4] and Ganghofner[5] describe the nodules and plates as free within the mucous membrane, between and above the cartilaginous rings, and reaching as far as the subepithelial layer. Eppinger,[6] Heyman,[7] and Hammer,[8] on the other hand, found distinct connecting links between these growths and the tracheal rings and regard them as ossified ecchondroses, a view similar to that held by Virchow.[9]

The same differences of opinion exist with regard to their formation. Steudener, for instance, who found no cartilage in and among the bony masses, is of the opinion that the bone developed from the elastic fibers of the mucosa; Denig regards the process as a direct transformation of the connective tissue, the cells later changing into bone corpuscles; while Ganghofner comes to the conclusion that the inflamed connective tissue first changes into cartilage and then into bone. Hammer, who studied altogether seven cases, including the published cases of Chiari and Eppinger, comes to the conclusion that all these bony tumors are developed directly from the tracheal cartilage and are finally transformed into bone. The outgrowths develop in a fungus-like manner, arising from the perichondrium by a stalk or stem, which sooner or later undergoes branching; the stems being usually thin but broad, and for that reason many sections have to be cut to find them. Hammer believes that this explains the fact that many have failed to find the connecting links between the new growths and the tracheal rings. Heyman comes to a somewhat different conclusion. In his case there was only one area which showed any connection of the bony masses with the perichondrium in which were evidences of proliferation; and for

[1] Read before the Chicago Pathological Society, June 11, 1900.

that reason he is inclined to the view of Virchow, namely, that the peripheral sections of the cartilage and perichondrium at certain portions undergo proliferation, and grow beyond the limit of the rings into the mucosa. As the growth advances the connection between it and the matrix grows gradually thinner, until it is finally severed, changing later into bone.

Whether the tracheal cartilage also takes an active part in the process is doubted by Recklinghausen.[10] He believes in a metaplasia of certain connective tissue bands which radiate from the perichondrium into the mucosa and become transformed into cartilage and osseous tissue, rather than an active proliferation of the tracheal cartilage; since the cartilage of the new growth is reticular and elastic, resembling, as pointed out by Virchow, the cartilage of Santorini (cornicula laryngis).

It is remarkable to what an extent the upper respiratory tract may become involved by these growths. They have been described extending from the larynx to the finer bronchi. The nodules may be single, but are usually multiple, or they may be united into several masses, varying in size from a millimeter or two to several centimeters; and, when consisting of bone, there may be solid blocks of canalized bone with Haversian canals and marrow spaces filled with fat and blood-vessels.

The case now reported involved the entire trachea and larger bronchi of a man 48 years old, who died at Cook County Hospital of a pneumococcus spinal meningitis and bronchopneumonia.

Description of Gross Specimen (Fig. 1). — The cartilages of the larynx are calcified; the mucous membrane is smooth and grayish in color, otherwise normal. The trachea is hard, rigid, and inflexible, as though it were in a cast. This fixed rigidity is due to irregular grayish masses which cover the entire interior surface of the trachea. These masses are situated beneath the mucous membrane, are rough and ridged and of bony hardness. The masses begin at the under surface of the second cartilaginous ring, filling out the membranous interspace; but a little lower down they spread above the rings, covering them. On the right lateral half they are thicker and more corrugated. As they approach the sixth cartilaginous ring they encroach upon the median line, fusing together into one reticulated mass. Deeper down the trachea this latticed mass becomes more prominent until it reaches the bifurcation, when it separates to either side, becoming finally lost in the larger bronchi. As the mass becomes separated, it again assumes its nodular character, breaking up into many smaller masses. Slightly above the bifurca-

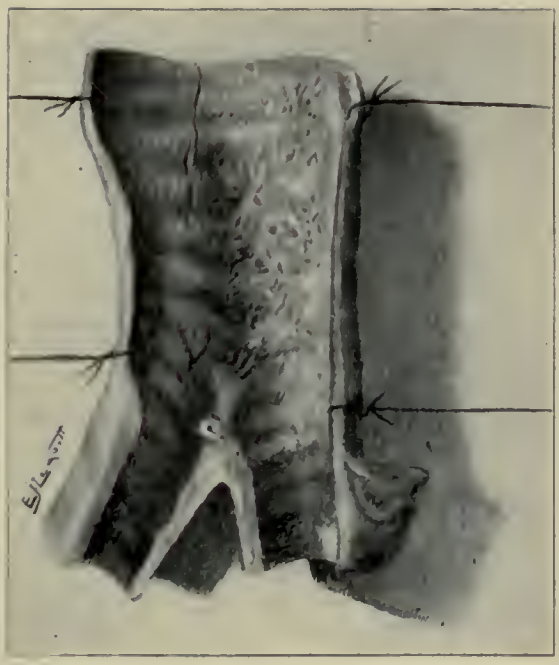

FIG. 1.—Showing trachea and bronchi. Opened from behind. The inner surface is corrugated; this is especially marked on the right lateral half, where it resembles lattice work. To the left and above the bifurcation is a pear-shaped body, situated between and above two rings.

FIG. 3.—Transverse section of trachea, low power (Weigert's elastic fiber stain): (*a*) cartilaginous outgrowths; (*b*) subepithelial bony plates, which are situated above and within the cartilaginous outgrowths; (*c*) elastic fibers, surrounding the bony and the cartilaginous masses; (*d*) tracheal ring; (*e*) submucosa; (*f*) perichondrium.

Transverse section of trachea, low power (hematoxylin and eosin): (*a*) Branching subepithelial bony plates; some are partially surrounded by cartilage; (*b*) ring-like exostoses filled with yellow marrow; (*c*) bony masses embedded in round-celled accumulations; (*d*) mucous glands; (*e*) tracheal ring showing thickened perichondrium; (*f*) connective-tissue patches and fat spaces.

tion, and to the left, is a pear-shaped body, irregular on its surface, and situated upon and between two rings which meet. It is about one centimeter in diameter and fuses at one point with the masses on its left. The masses in the bronchi have the same appearances as those described in the trachea, with the exception that they are less developed and not so reticulated.

Microscopical Examination.—For a microscopical study a piece of the trachea was decalcified, hardened in alcohol and formalin, embedded in paraffin, cut, fixed on slides, and stained with hematoxylin and eosin, Van Gieson, Weigert's elastic fiber stain, etc.

Transverse sections from within outward show the following changes (Fig. 2): The columnar epithelium is flattened and has lost more or less its epithelial character. The epithelial layer projects here and there so that the inner surface of the sections has a wavy appearance. This is due to irregular, pinkish, homogeneous bodies, which are situated beneath the epithelial layer. Some of these bodies are solid, others contain spaces, which are filled with blood-vessels, small, deeply staining cells, and fat-like spaces. These various sized plates extend throughout the subepithelial layer, some are connected by branches with each other, others are free, and some again are united by bands of connective tissue, which has lost its fibrillary structure and is homogeneous and dense. Some of these branching masses extend down as columns into the submucosa and are united to the internal perichondrium. In some sections the columns form complete irregular rings, united or fused below with the perichondrium and above with the mass situated beneath the epithelial layer. By this union smaller or larger spaces result which are filled with fatty marrow. Partially surrounding some of the plates are several layers of cells enclosed in capsules and embedded in a homogeneous ground substance; and around these layers again are collections of small, deeply staining cells, containing numerous distended capillaries. The submucosa is largely converted into an areolar tissue, infiltrated here and there by collections of round cells and capillaries. Nests of cartilage cells are also present, which vary in size from one-half to several millimeters; these are usually embedded in the round-celled accumulations. It is reticulated in structure, and the cells are enclosed by capsules. The mucous glands are swollen, some are granular, while others again have undergone atrophy or have disappeared. They are all infiltrated by the same small, round, deeply staining cells. Scattered throughout the mucous membrane are patches of connective tissue, dense and of a homogeneous appearance, resembling scar tissue. The cartilaginous

rings are somewhat thickened; the cells are increased in number; many stain deeply with hematoxylin, others again are swollen, irregular in shape, or undergoing proliferation. The ground substance is dense and infiltrated with calcium salts (calcified). The perichondrium is greatly thickened, opaque, and homogeneous in appearance, and in many sections stains in the same way (hematoxylin and eosin) as the plates and masses beneath the subepithelial layer. Its inner surface is irregular and rough in outline, due to small projections, while near the median line the perichondrium projects like a stalk or stem into the submucosa. This stalk is only seen to advantage in one or two sections, and, not being very thick, is soon lost in other sections. A little above its base the stalk branches. The smaller of the two is united to a shoot or twig, which springs from one of the subepithelial plates by an intervening band of connective tissue, while the larger branch which extends to the right soon divides into two smaller branches. This right branch also is united by a band of connective tissue to the plate above as well as to the branch to its left. By looking through many sections it is found that the branching subepithelial plates are offshoots of the stems arising from the perichondrium, which divide and subdivide, forming complete, irregular, bony rings. Besides the large stalk there are smaller ones, which also arise from the perichondrium. These are more delicate; they also divide and subdivide, and as observed in some of the sections are united with each other, forming complete or incomplete rings. These stalks, as well as the branching subepithelial plates, are made up of one and the same structure, namely, of concentric or irregular lamellæ, among which are scattered elongated nuclei, each of which is enclosed by an irregular capsule or space.

From these appearances it is evident that we have to deal with the formation of true bone, which not only is made up of concentric lamellæ, lacunæ, and canaliculi (Haversian system), but also contains spaces filled with yellow marrow. These arise from the perichondrium (by stalks or stems), and are therefore to be regarded as true exostoses. Not all of the subepithelial plates, however, are connected to the perichondrium by true bone, but are separated from it by solid blocks of cartilages—in other words, by true ecchondroses, as they arise from the perichondrium by bands of connective tissue which interlace and surround the cartilage blocks, giving them a reticulated appearance. The upper portions of the cartilage upon which the subepithelial plates rest and into which they gradually fuse do not show this reticulated structure. The

ground substance is more homogeneous, denser, the cartilage cells are smaller, more elongated, and evidently changing into bone corpuscles. This transformation of the cartilage into bone is beautifully shown by Weigert's elastic fiber stain. The bony nodules stand out as pinkish, creamy bodies, in striking contrast to the purplish-red cartilage masses. As the cartilage gradually changes into bone, the red color of the ground substance becomes lighter, and here and there are seen spots of beginning ossification. The elastic elements which are brought out so beautifully by this stain are prominently developed. They run in every direction as fine threads or twigs, interlacing with each other, penetrating as well as surrounding the cartilage and bony masses. Fine twigs are also seen among the collections of round cells and surrounding the walls of minute capillaries. They run as thicker threads beneath the subepithelial layer, in the perichondrium (outer as well as inner surface), and are here and there broken up into fragments. Surrounding the bony and cartilaginous masses they form a thick network, standing out almost as bluish-black cords.

As mentioned before, many of the bony nodules are isolated and free, surrounded either by cartilage or are embedded in a mass of connective tissue cells rich in blood-vessels. Here it seems as if the connective tissue cells change directly into bone corpuscles, without the intermediate stage of cartilage, as the connective tissue immediately surrounding the bone appears homogeneous, while the cells are more elongated, some being encapsulated. This growth by apposition is also described by Denig and Arnsperger[11]; in our case, however, this mode is the exception and not the rule.

The recent publications of Manasse[12] and Glockner[13] on amyloid tumors of the trachea in which bone and cartilage were also present induced me to stain sections for amyloid. In the few sections thus treated it was either absent or the material did not react to the stains. Schmidt[14] previously emphasized that a certain relation exists between the formation of bone and cartilage on the one hand and amyloid on the other. Amyloid is now thought to be closely allied chemically to elastic fibers and cartilage (chondratin-sulphuric acid with a proteid), hence Glockner enlarges Schmidt's statement to the effect that local amyloid is found in organs which are rich in elastic elements and cartilage. For similar reasons he explains that the presence of bone and cartilage in amyloid tumors is the result of a metaplasia of connective tissue, rich in elastic elements. That they play some part in this process is evident, for they are plentifully developed in the cartilaginous outgrowths. Furthermore, it

verifies Recklinghausen's belief, that the normal tracheal cartilage does not take an active part in the production of the outgrowths, but that the latter wholly arise from the perichondrium.

There is one point yet to be noted with regard to these outgrowths: on the one hand, we have, as previously described, seemingly true exostoses arising from the perichondrium, while on the other only ecchondroses. Are both to be regarded as distinct processes, or do they represent different stages of the same process? What seems at first so confusing are the stalks which Hammer regards as typical in these outgrowths, and of which I find so few in the exostoses and none in the ecchondroses. From the microscopical appearances of the sections I have come to the conclusion that the stalks are but parts of bony rings. The rings are formed by the branching subepithelial plates above and by the perichondrium below. Now in certain sections the rings are found incomplete, the connection with the perichondrium is wanting; but when we compare these sections with those containing the stalks, we find that the stalks are portions of incomplete rings, which connect them to the perichondrium and which have become severed in sectioning. These bony rings I believe are derived from ossified ecchondroses. Their development is to be explained in the following manner: The cartilaginous outgrowths, as they approach the subepithelial layer, being connected with each other, either through connective tissue bands or cartilage, become metamorphosed into bone (Fig. 3), starting from above downward. This new bone is at first solid and composed of concentric lamellæ, which constantly increase in extent. As this goes on the central area of the bone becomes canalized, probably by absorption, as in a few of the spaces I have seen multinuclear cells, which probably play the rôle of osteoclasts. The process gradually extends until the whole mass of new bone is converted into a large ring, reaching to the perichondrium. All the smaller subepithelial plates are nearly surrounded or capped by a shell of cartilage; the larger the spaces, the less cartilage surrounding the bone, indicating a more advanced process. The larger rings are devoid of cartilage and made up of only one or two lamellæ of bone. By comparing the original ecchondroses with the ring-like exostoses we note how nearly alike they are in diameter, showing that we are dealing with various stages of the same process and not with two distinct conditions.

This mode of transformation of the cartilaginous outgrowths into bony rings it seems to me would explain in a manner the different conclusions reached by various observers. For as the

process continues, the outgrowths may become entirely separated from the perichondrium, not by connective tissue growth from outside, but by absorption from within, which constantly enlarges the space until the ring is completely severed from the perichondrium. When sections are examined at this stage the connection with the perichondrium is lost, and the subepithelial plates seem to have developed free in the mucous membrane. For this reason many observers have regarded the growths as true tumors. Maischikoff,[15] for instance, advances the theory that they are the result of an anomaly in the development of the tracheal rings. He says the tissue which serves as ground substance for the future tracheal rings has spread beyond the boundary line into the mucosa. In this tissue there may be formed cartilage. Later the misplaced cartilaginous areas are metamorphosed for some unknown cause into bone. This statement of course cannot hold, in the face of our findings. Traumatism and various chronic inflammations in the mucous membrane would seem to be the essential factors in the production of these outgrowths. In the case of Heyman there were marked chronic inflammatory changes in the mucous membrane with a suppurative perichondritis which had perforated into the esophagus. Hammer, who investigated all the reported cases, divides them into two groups. In the first, as a result of syphilis and rhinoscleroma a chronic inflammation of the mucous membrane of the trachea existed leading to scar formation, reaching as far as the perichondrium, and causing the perichondrium to proliferate. Under this head belong the cases of Gaughofner, Chiari, Heyman, and two of his own cases. In these cases scars were present in the mucous membrane which led to stenosis. Syphilitic lesions were also found in other parts of the body. The second group comprises all those cases in which no chronic inflammatory processes could be demonstrated in the mucous membrane of the trachea. These are the cases in which the growths have been regarded as true tumors. Almost all occurred in old persons, in whom senile calcification of the tracheal rings existed; besides, there were chronic catarrhal inflammations of the respiratory tract, as bronchitis and tuberculosis. Chronic interstitial inflammation is regarded by Arnsperger as the exciting cause of bone formations in the lungs. The fact that trauma may play some part has, I believe, been overlooked. An analogous case is reported by Cohen.[16] A man kicked by a horse in the thigh soon developed a swelling of bony hardness in the muscles of the thigh, which later, on removal, was found to have sprung from the periosteum of the femur. It is

therefore possible that injuries, blows, etc., to the upper portions of the trachea or larynx may excite a perichondritis followed by subsequent outgrowths, for they usually start at the upper portion and frequently begin in the larynx. Unfortunately, in our case no history was obtainable. There were present, however, some senile changes. The aorta showed an arteriosclerosis, while one of the peribronchial lymph glands was calcified. The spinal dura and pia were also calcified, and in the left lung was an encapsulated caseous focus. Of course, we can only conjecture as to what relation these conditions bear to the growths. There was present in the mucous membrane of the trachea considerable round-celled infiltration—granulation tissue—and patches of scar tissue, while the tracheal rings were calcified; and with the outgrowths we have a typical picture of a chronic inflammation. Whether the outgrowths were secondary or not I am unable to say. It is remarkable that nearly all of the cases have died from some pulmonary affection, namely, tuberculosis, abscess, or gangrene of the lungs. It would seem that as a result of this condition the respiratory tract is weakened against the invasion of microbes, especially since the epithelial cells are changed, even destroyed.

As to the clinical significance of these growths very little is to be said. They are rarely if ever recognized during life, except when situated at the upper portion of the trachea, and grow to such size as to interfere with respiration. A case of this kind is reported by Jackson[17] in a man who complained during life of dyspnea. At autopsy he found a cartilaginous tumor about two inches below the larynx, which occupied about one-half of the passage. When situated in the larynx they are readily recognized and even successfully removed. These growths, however, are almost all cartilaginous in nature. Cases of this kind have been reported by Stoerck,[18] a number by Bruns and Putelli,[19] and in this country by Asch,[20] Ashhurst,[21] Musser,[22] Solis Cohen,[23] and Ingals.[24]

In conclusion I desire to express my indebtedness to Prof. L. Hektoen for material and for many kind suggestions in the preparation of this paper.

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THE BLOOD IN NEURASTHENIA: A STUDY OF THIRTY-THREE CASES, BASED ON A DIFFERENTIAL LEUCOCYTE COUNT.

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The medical profession is alive to the fact that most of our knowledge of the real nature of disease is being obtained through recognition of the etiological factors which cause those changes in physiological function and structure resulting in pathological lesions. Pathology, based on a knowledge of normal structure and physiological function, has placed medicine on a scientific basis.

Despite their profound effect upon the economy many of the neuroses and psychoses are not attended by any definite pathological change. This is particularly true of that varied symptom-complex known as neurasthenia. The reason for this lies in the fact that their purely functional nature is not severe enough to affect the gross anatomy, and the abnormal state of the neurons has not reached that stage of disease reaction which is pathologically demonstrable. There is, however, one anatomical element diffused throughout the system whose functioning is absolutely necessary for all metabolic equilibrium. It is so complex, highly organized, and unstable, it is so ever-changing in structure and chemical composition, and so sensitive to its cellular environment, that even the slightest deviation from the physiological normal causes in it a correspouding change. This mobile tissue—for as a tissue it is now rightly regarded—is the blood. The blood, then, should be investigated to see whether it does not throw light on the otherwise intangible nature of many nervous and mental diseases. In the process of nutrition, although the controlling factor is the neuron, the material factor is the blood.

The majority of recent authoritative writers on functional nervous disease say very little about the blood and the variations in its constitution. Binswanger (Pathologie und Therapie der Neurasthenie), Lowenfeldt (Pathologie und Therapie der Neurasthenie), Nothnagel (Special Pathologie und Therapie), and others, give practically no information. Equal silence is preserved by hematologists such as Grawitz (Klinische Pathologie des Blutes), Limbeck (Klinische Pathologie des Blutes), Cabot, Ehrlich, and Hayem. For

this there has been good reason, since the examinations made by these investigators have revealed no abnormal condition of the blood, or only such slight anæmia as is associated with a general disturbance of nutrition from other causes.

The present-day methods of examination and analysis of the blood are still too crude and inadequate to enable us to determine much more than the gross morphological changes and a few of the more pronounced microchemical changes. The intimate intermolecular changes in structure and composition, those which constitute the true physiology of the blood, are far beyond our perception.

With a view of determining what, if any, morphological changes take place in the blood in neurasthenia, we have selected the following cases from the neurological clinic at the Post-Graduate Hospital for careful and detailed study. The patients were all adults, about equally divided between the sexes, nearly all typical, and from a clinical point of view chiefly of the cerebral and vasomotor type. To exclude one possibility of vitiation of statistics, all cases were rejected in which there was complicating or associated disease. As the blood is known to be subject to marked variations at different times of the day, and especially just after ingestion of food when the digestion leucocytosis appears, and to make sure of obtaining the utmost uniformity of conditions, the blood specimens were taken at about the same time of day, 4 P.M. As variation in the technique often causes different investigators to obtain quite varied results, and especially since in the finer examinations accuracy and attention to detail is necessary, it may be well to explain the routine technique and tabulation followed.

To avoid confusion in making the differential counts the classification adopted was that generally accepted by most hematologists. Writers on hematology have not as yet agreed on a definite classification of the cellular elements of the blood or on a uniform and exact nomenclature. In fact, each seems to have a classification of his own; one basing it on morphological characteristics, another on differential staining, most on a combination of both methods. Cabot, the best English authority, recognizes the following forms of leucocytes: polymorphonuclear neutrophile leucocytes, small and large lymphocytes, transitional forms, eosinophile leucocytes, basophile leucocytes, abnormal myelocytes, mononuclear neutrophile leucocytes, and eosinophile myelocytes. This division, as are all others, is somewhat arbitrary, for the reason that intermediate forms are found with the characteristics partly of one and partly of another, so that it is

often difficult to determine in just which group to place them. This is especially true of the lymphocytes. According to Cabot the small lymphocyte has the following characteristics: a mononuclear cell without granules, stainable by Ehrlich's triacid stain, size 5 to 10 μ; nucleus round, staining deep blue; protoplasm scanty, appearing as a thin rim usually unstained. The large lymphocyte: a mononuclear cell, without granules, stainable by Ehrlich's triacid stain; nucleus larger absolutely but smaller relatively to protoplasm, and stains lighter; size 13 to 15 μ; a small form, size 6 μ, is described, the nucleus having a slight indentation. Transitional forms: similar to large lymphocyte, nucleus indented or bent, sometimes with a few faint neutrophile granulations in the protoplasm. Typical small lymphocytes have a nucleus smaller than an erythrocyte with a thin rim of protoplasm, so that the entire cell is about the size of an erythrocyte. Now a form is found sometimes with a nucleus of the same size, but with such an abundance of surrounding protoplasm that the entire cell is the size of a large lymphocyte. Is this to be classed with the former or the latter? Again, certain cells with a round and very large nucleus, much larger than the entire typical small lymphocyte, have only a narrow rim of protoplasm. With which are these to be classed? As regards the transitional forms, which differ from the typical large lymphocyte chiefly in the shape of nucleus, all shapes and sizes are found, some with only a slight indentation, which may be only a distortion suffered by a large lymphocyte in the process of spreading the blood, and several have been observed which would pass for polynuclear leucocytes had they the neutrophile granulations which, according to Cabot, they sometimes have.

For the sake of simplicity, in the table there have been recognized small and large lymphocytes only, the transitional forms, which are relatively few, being classed with the large. To avoid confusion in making the differential counts, especially as regards the classification of intermediate forms, the nature of the cell was decided principally by the size and shape of the nucleus, hematoxylin and eosin being used as stain. With this the lymphocytes presented two forms not easily confused. A small lymphocyte was determined by these features: nucleus round, diameter less than 1⅓ the diameter of an erythrocyte—*i.e.*, less than 10 μ—and stained deep blue, protoplasm usually scanty. A large lymphocyte was determined by these features: any other lymphocyte, nucleus larger than 10 μ, of various shapes, stained fainter, protoplasm much greater. The other cells were easily distinguished by their

neutrophile, eosinophile, or basophile granulations, as lymphocytes show no granulations with the stains used, namely, eosin and hematoxylin and Ehrlich's triacid. In addition a number of remnants of leucocytes, regarded as degenerate forms, were indicated by a large faint irregular or distorted nuclear mass with sometimes a faint unstained outline or a few shreds of diffused protoplasm surrounding it, and occasionally containing a few faintly staining eosinophile granulations. Sometimes the diffused irregular nuclear mass, without a vestige of protoplasm, was surrounded by a number of scattered faintly staining eosinophile granules. These are classed as degenerate leucocytes.

In making the differential counts the central portion of the specimen was chosen, as this presented the most uniform distribution and showed the morphological characteristics to best advantage, because here the film thinness is most uniform. Any one who has done much blood work recognizes the fact that the thickness of the film greatly influences the size and structural appearance of the leucocytes, so that a small lymphocyte in a thick stratum often appears as an intensely staining nucleus with but a thin rim of protoplasm, and in the thinnest stratum flattens out to such an extent that the nucleus is larger, stains less strongly, with the protoplasm one-half the diameter of the nucleus, so that it might easily pass for a large lymphocyte. The converse is true of the large lymphocytes in the thicker blood strata. Moreover, the neutrophiles have a tendency to aggregate in groups toward the end of the film, and often at the edges where the film is thickest, thus disturbing the real ratio as counted.

The accompanying table represents the examinations of thirty-three cases of neurasthenia. The numbers indicate cells per thousand, and throughout the text all numbers refer to cells per thousand. The terms used in the table are employed in accordance with the definitions set forth in this paper.

The average given in the table shows, first, the relatively much increased proportion of lymphocytes to neutrophiles, and especially the great increase of large lymphocytes, with a corresponding decrease of neutrophiles. The differential count given by Cabot as limits to be considered normal is: neutrophiles, 620–700; small lymphocytes, 200–300; large lymphocytes, 40–80; eosinophiles, 5–40. Most authorities agree that in the adult the average normal proportion is about: neutrophiles, 660; small lymphocytes, 250; large lymphocytes, 60; eosinophiles, 22.

Number.	Neutrophiles.	Small lymphocytes.	Large lymphocytes.	Eosinophiles.	Degenerate leucocytes.
1	498	264	218	19	0
2	483	201	281	33	0
3	606	26	36	18	0
4	498	186	77	11	8
5	584	234	181	0	22
6	520	364	98	15	5
7	801	96	104	0	0
8	552	138	171	16	121
9	490	78	315	39	73
10	649	233	103	120	0
11	520	257	180	36	10
12	420	358	189	17	17
13	375	338	240	18	18
14	500	309	161	30	0
15	628	74	188	51	56
16	740	201	14	43	0
17	552	237	127	49	33
18	381	431	103	22	61
19	588	335	41	29	5
20	505	367	111	50	11
21	625	256	81	18	0
22	448	255	274	13	8
23	801	152	39	8	0
24	401	337	231	24	4
25	442	327	190	39	0
26	444	373	133	35	13
27	450	391	84	36	67
28	473	350	127	33	14
29	564	351	66	16	0
30	564	265	163	39	0
31	265	513	148	29	42
32	729	189	43	21	14
33	588	291	144	55	0
Average.	532	388	111	30	18
Normal..	660	250	60	22	...

On comparing the average blood in neurasthenia with the normal we see the striking difference in the ratio of neutrophiles to lymphocytes, 532:499, nearly 1:1, and 660:310, about 2:1, respectively. The ratio is much more abnormal in the individual cases—31, 13, 18, 24, 12, with 265:661, 375:578, 381:534, 401:568, 421:542, respectively.

The ratio of small lymphocytes to large is 388:111, about 3:1, and 250:60, about 4:1, respectively. Cases 9, 15, 2, 8, 7, with 78:315, 74:188, 201:281, 138:171, 96:104, show a still more disturbed ratio.

Another interesting feature is the large percentage of eosinophiles as compared to the normal, averaging 30:22. Certain cases are characterized by a marked eosinophilia, as 10, 33, 15, 17, 16, 9, 30, 25, 27, 26, with 120, 55, 51, 49, 43, 39, 39, 39, 36, 35, respectively.

Most striking is the number of large lymphocytes, 111, as compared with the normal, 60. In certain cases the differeuce is much greater, as cases 9, 21, 22, 4, 13, 24, 1, with 315, 281, 274, 271, 240, 218 large lymphocytes respectively.

Not less remarkable is the number of degenerate leucocytes,

average 18, but in cases 9, 8, 27, 18, 15, 31, with 121, 73, 67, 61, 56, 42, respectively.

Some of the cases, as 27, 31, 30, 28, showed an unusually large increase of basophiles, with 38, 5, 5, 4, respectively; the normal average is about 2.

As regards the general features the following observations are to be recorded. Many cases showed a leucopenia—that is, a decreased ratio of leucocytes to erythrocytes, often quite marked. In connection with this it is interesting to note that one of the therapeutic measures considered most efficient in the treatment of neurasthenia, namely hydrotherapy, has the effect of removing this condition of the blood, for cold baths cause a physiological leucocytosis. Some cases, chiefly those well nourished and physically in perfect health so far as appearances go, showed a normal count; a few showed a slight leucocytosis, associated perhaps with a slight local inflammatory process otherwise unobserved, as would be the case had the patient an infection. Nearly all had a more or less marked oligochromia, often with many microcytes and a few poikilocytes. In one case a normoblast was observed. Case 17 with a slight leucocytosis showed a neutrophile lymphocyte ratio of 552:364, which is not far from the normal ratio, though decidedly abnormal if the leucocytosis was an inflammatory one, as then there would have been a pronounced neutrophilia instead of a neutropenia.

Concerning the individual cells, in many cases a noticeable feature was not only the general enlargement of the small lymphocytes, but the often great increase of their protoplasm, which made the entire cell as large or larger than a neutrophile. The protoplasm sometimes showed granules more or less coarse, occasionally basophile, generally unstained, as clear bodies with a high refractive index. A curious feature in some specimens was a central or occasionally eccentric round body in the nucleus and stained intensely, appearing much like a nucleolus. Some of those about the size of an erythrocyte showed a symmetrical peripheral distribution of the nuclear chromatin, often with a central clump, very similar in appearance to the segmentation form of the tertian hematozoon. The erythrocytes presented either a normal appearance or that usually observed in oligochromia of various degrees. In many cases, however, large numbers of them presented a prominent central part appearing like a small circular biconvex highly refractive body, stained lightly with eosin, and standing out in many cases sharply against the pale, thin, and almost transparent biconcavity of the erythrocyte. This feature is not characteristic of neurasthenic

blood alone, as it is common in other conditions associated with oligochromemia, and has been observed in practically normal blood, although in less degree, in certain erythrocytes in blood strata not too thin. Certain methods of staining bring out this central part more distinctly than others, and it has been stained with both acid and basic dyes. The writers believe that this body is normal to the erythrocyte, bears a definite relation to the blood platelets, and is also a factor in rouleaux formation of erythrocytes. That this is, if not a distinct body, at any rate a modified form of the proteid hemoglobin, is evidenced by the fact that it differs in refractive index, in elasticity and cohesiveness, and also has less affinity for eosin. In the process of spreading the blood many specimens have been observed which showed this substance stretched beyond the periphery of the cell or united with that of another erythrocyte to form a sort of bridge between them. One specimen of neurasthenic blood showed quite a number of these twin erythrocytes, which in the fresh blood had probably adhered, but separated when spread on the slide, though still united through the cohesiveness and elasticity of their central constituent which formed a band uniting their centers.

The belief that the blood-plates have, if not their origin in this substance, at least some close relationship to it, rests on the following considerations. A frequent appearance is the picture of a blood-plate near or in the periphery of an erythrocyte with the adjacent hemoglobin indented or parted as though dissolved away, or a large group of platelets adhering to one another with fragments of the erythrocyte left near them, or a string of them issuing from the erythrocyte, which is always more or less changed and sometimes has only a few small fragments left How is this phenomenon to be interpreted? As regards the erythrocyte the platelets are of necessity either exogenetic or endogenetic. If the latter, it is incomprehensible that they should exert an influence for the destruction of erythrocytes. That normal elements of the blood should thus, figuratively speaking, wage war on one another does not seem in accord with the logic of nature. If, however, the platelets are of exogenetic nature, an explanation which is in accordance with the observed facts is possible. In the first place, it is well known that the erythrocytes normally are destroyed by the million, and *a priori* reasoning teaches us that the life of a cell without a nucleus must be of short duration. Their decomposition and solution in the plasma is not so rapid but that we may see in the general circulation occasional ones in all stages of disintegration, but nearly always with one or more platelets near-by. This is explained by assuming that the

central substance gives off portions by actual division or as a kind of budding process, or that in the process of spreading these portions are torn off to form a series of platelets issuing from the erythrocyte which has reached the stage of disintegration, and is therefore easily torn or distorted. That a single erythrocyte may be associated with a group of platelets many times larger than itself is easily explained by the great cohesiveness of the platelets, causing a group to become attached by a single platelet to a near-by erythrocyte.

For the sake of convenience in making up these data the term "nucleoid" was used to designate this central constituent of the erythrocyte. As the nucleoids and platelets agree in physical, microchemical, and associative properties, it is fair to assume that they are really the same thing, only in different stages. As an illustration, the specimen which showed most nucleoids had oue erythrocyte which, though free, dried edgewise on the slide—a very unusual thing. After staining it was observed that the outline of the cell presented that of a biconcave disk viewed edgewise, but in addition there appeared on each side located centrally the projecting halves of the nucleoid, faintly stained, but clearly defined. In blood films the force of capillary attraction and gravity causes the plane surface of the erythrocyte to lie parallel to that of the slide. In this case it was undoubtedly the cohesiveness of the nucleoid which, pressed by the spreader against the slide, adhered and fixed the erythrocyte in the position observed. The subject, however, needs further and more exhaustive investigation. A frequent abnormality was the appearance of very small, hyaline, very refractive, unstainable granules or rods in the erythrocytes, generally one or two placed side by side or as rods at an angle. Though observed occasionally in blood apparently normal, they appeared most frequently and in greatest number in the cases of neurasthenia.

How to interpret these changes in the blood is something which leads more to speculation than admits of explanation. Still more difficult is it to harmonize a condition of profound neurasthenia with an apparently normal condition of the blood, which sometimes is found. Too little as yet is known of the real physiology of the blood, particularly as regards the signification, nature, and relationship of its many different cellular elements, both normal and pathological, for our present knowledge still rests chiefly on hypotheses more or less established. It is not uulikely that in the near future the physiology and pathology of the blood will be elucidated. Then we shall be able to understand the concordance of a functional abnormality and its expression in the condition of the blood. Eveu in

our present stage of knowledge the diagnostic value of an examination of the blood is most important in many diseases, some of which, indeed, cannot be diagnosticated positively without such examination. The deductious, however, both diagnostic and prognostic, must be made in connection with a knowledge of the symptoms and physical signs of the case.

As regards the leucocytes alone we may find both negative and positive extremes, not only in different diseases but in the same disease, depending on the stage and severity as well as on the constitution of the individual. In general, it may be said that a stimulus strong enough to excite a cellular reaction beyond the physiological limit, whether the irritation or trauma be kinetic, chemical or physical, manifests itself by a local, which may become a general, leucocytosis depending on the nature, degree, and duration of the stimulus. Clinical experience and, more accurately, experimental investigation have shown that this leucocytosis is commeusurate with the degree of inflammation, or in other words, with the intensity of cellular reaction.

Normal vital processes cannot go on without those stimuli provided by our natural environment, and it is only when the physiological limit for any given individual is exceeded by the action of an abnormal factor that an abnormal condition makes itself evident as an "inflammation." As an inflammatory leucocytosis is characterized chiefly by an increase of the neutrophiles, it is logical to assume that the neutrophile is an index to vital activity, and an increase thus indicates increased cellular reaction which, if normal, keeps the leucocyte proportion at a normal average. Would, then, the converse of this hold good, that a decrease of neutrophiles, such as we find in neurasthenia, indicates a cellular activity below par and finds its expression in a general disturbance of nutrition and consequently abnormal functional manifestations? However, we must be careful not to misinterpret cause for effect, or *vice versa*. As regards the relation of leucocytosis to the severity of the inflammatory process and its diagnostic value in disease, it must be remembered that in pneumonia, for instance, a leucopenia sometimes appears instead of a leucocytosis, and experience has shown that this occurs only in the gravest cases with the worst prognosis; the leucocytosis of inflammation holds true up to a certain degree of toxemia only; if overwhelmed the overstimulation paralyzes the reactionary power and causes a sequential leucopenia.

The word stimulus in the text is used in a sense including any factor which changes normal cell metabolism, and not in the strictly therapeutic sense with its arbitrary though rational and necessary

classification of drugs into stimulants and depressants, as it is well known that of the same substance one dose will stimulate, another depress, in the therapeutic or the common physiological acceptation of the term. We find the best illustration of this in that most common and most powerful of kinetic "stimulants," temperature, a variation of which, expressed relatively as "heat" or "cold," may stimulate or cause relaxation or depression, depending on its degree and the existing constitutional condition. It is not rational to assume that a material substance or a form of energy will stimulate and again depress, because the nature of its action is the same, although the cell reaction may be different.

That the relative proportion of leucocytes may be regarded as an indication of negative or positive vital activity or vitality is further supported by the fact that in debilitated states, but not considered definite diseases, or even in persons believed to be in perfect health but not of vigorous or active nature, a decrease of neutrophiles with a relative lymphocytosis has been observed.

The hematological pathology of neurasthenia is by no means invariable; while some cases have apparently normal blood, the blood usually presents the following condition: a relative increase of the large and small lymphocytes with a corresponding decrease of neutrophiles, a relative increase of eosinophiles and degenerate leucocytes, a leucopenia often, oligochromemia, microcytes, and variation in the size of the erythrocytes, which often show nucleoids or are associated with an increase of platelets.

In general the condition of the blood corresponds with what we might expect to find in such a bodily condition. The great variation often observed in individual cases is not surprising when we consider that no two cases are exactly alike, either as regards symptomatology or severity of the disease, with primary constitutional differences of the most varied character. Moreover, the intensity of certain symptoms, especially the subjective, is by no means always a measure of the real degree or stage of the affliction.

It is to be observed that in neurasthenia there is often a striking lack of correspondence between the intensity of the subjective symptomatology and that of the objective, and in general it may be stated that the hematological abnormalities both in kind and in degree correspond more with the objective than with the subjective clinical picture. The subject needs fuller and more exhaustive investigation to determine definitely the finer differentiations in the hematological abnormalities, especially the plasma, in the discovery of whose microchemical and especially biochemical properties and reactions lies the hematology of the future.

BOOK REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Assisted by Charles Adams Holder, M.D. Volume III, September, 1900. Price, $10.00 per annum. Philadelphia and New York: Lea Brothers & Co. 1900.

The third volume of Progressive Medicine for the current year is fully equal to those that have preceded it. William Ewart writes the article on diseases of the thorax and its viscera, including the heart, lungs, and blood-vessels. The *résumé* of Ewart covers 137 pages and departs somewhat from the plan previously followed in this excellent quarterly; far too many articles are abstracted, and we have altogether too little of the author's opinions on the various contributions. In the main, however, it is a strikingly faithful record of what has been done during the past year in this department. In the treatment of croupous pneumonia, the author expresses a profound skepticism of the value of specific medication, and leans decidedly toward milder remedies, feeling in this that we are on safe ground. In the matter of local applications we are told that a warm poultice in this disease never distresses a patient, while another claims that cold applications can do nothing but good. As both of these are indicated, it might be well to allow the feelings of the patient to decide. The serum treatment is said to have fallen far short of requirements. In the treatment of emphysema the mechanical measures, as illustrated in Willock's and Ewart's respiratory jackets, are fully described. The *résumé* on the treatment of whooping-cough shows that bromoform has largely fallen into disuse, it having been succeeded by antitussin, euchinin, and rectal injections of carbonic acid gas. The *x*-ray in the physical examination of the chest is said to supplement rather than supplant our previous methods. Williams is quoted as stating that it is possible to recognize a central pneumonia by this means, which would be overlooked by all other methods of investigation. In the treatment of aneurism there is a reference to the use of wire connected with a battery. The use of injections of gelatin as well as the administration internally of this substance, combined with rest in bed and the application of cold, is recommended. The extensive discussion which has been going on on the use of digitalis shows that this time-worn subject is by no means exhausted. A number of the best clinical observers have restudied digitalis during the past year.

Henry W. Stelwagon begins the article on diseases of the skin with an abstract of Elliot's admirable paper on the rôle of pus organisms in the production of skin disease. In speaking of erysipelas, the discovery by Pfahler of a diplococcus which fulfils the postulates of Koch is referred to. Eczema comes in for extensive consideration. Notwithstanding the amount that has been written upon this subject, we do not see that anything of very great value has been added to the treatment; the discussion regarding its parasitic or diathetic origin still goes on.

William G. Spiller takes about one hundred pages to tell us of the literature of diseases of the nervous system between June, 1899, and June, 1900. He

presents a critical *résumé* rather than an attempt to refer to all published papers of importance. Clinical neurology is the department which is most extensively studied, there being only occasional references to the pathology.

Richard C. Norris discusses the contributions to obstetrics. To one not thoroughly acquainted with the progress in this department, or who believes that obstetrics is practically a finished subject, we would recommend the perusal of this article. Among the more striking things referred to is the application of the *x*-ray in the study of the complications and diagnosis of pregnancy. The references to puerperal sepsis, eclampsia, puerperal insanity, incubation of premature infants, dystocia, and other subjects, show the interest taken in this branch of medical art.

Diseases of Infancy and Childhood. By Dawson Williams, M.D. Second Edition, Revised. With Additions by F. S. Churchill, M.D. Philadelphia and New York: Lea Brothers & Co. 1900.

This is an American reprint of an English book. The text of Dr. Williams is produced entire, together with such additions as are deemed necessary to bring the work up to date and exploit American views. The latter are enclosed in brackets. The author in the preface admirably describes the essential differences between the pathological processes in infantile and adult diseases. The differences are traceable to two main causes. The organism in childhood is growing, and while it is peculiarly vulnerable to external agencies, it possesses also a special power of adaptation and recuperation. The organism of the child has not acquired immunity to various specific infections. He does not attempt to describe diseases which present similar symptoms at all ages. His object has been rather to present the special incidents of diseases in childhood and to point out the peculiarities which the circumstances of child life impress upon familiar diseases. With the exception of rickets, there is no disease peculiar to childhood.

The work begins with a description of hygiene and growth in infancy; the clinical examination of infants and children does not receive as extended discussion as it should.

There is very little in this work calling for extended comment, as it is a fairly conservative statement of the most generally accepted views in pediatrics. There is an introductory chapter on the management of acute specific infectious diseases. In speaking of smallpox the writer refers to the value of vaccination. Of 1117 cases admitted to the Infectious Diseases Hospital of London in 1894, 127 were children under seven years of age, and 178 children from seven to fourteen years. Of those under seven, 111 had not been vaccinated, and all deaths of children occurred in this group. The value of Koplik's spots in measles is conceded. It is stated that Class of Chicago believes that he has discovered the specific organism of scarlet fever. It is more than a year since the publication of Class's paper, and it would seem that there ought to have been some confirmation or refutation of so important a discovery after that length of time. There is an excellent chapter upon tuberculosis and inherited and acquired syphilis. In the chapter on rheumatic fever, the writer places arthritis as among the first of the manifestations of rheumatism, though attention is called to the frequency with which cardiac complications occur with limited involvement of the joints. In the treatment of rickets, phosphorus and cod-liver oil are especially recommended, though it is admitted that no drug

has any specific action upon the disease. General improvement in the surroundings of rickety children is recommended, with careful attention to diet. There is a short chapter on anemia, with a study of the blood as found in early life. Some excellent plates are given illustrating cretinism.

The work is a comparatively small one, as works commonly go. It has 542 pages and forms a condensed statement of the diseases of infancy, which will be found practically useful by the undergraduate. Practitioners, we fancy, will wish for a larger work, particularly those who have had some experience in the management of sick children. The work is handsomely published, and what illustrations are employed are excellent. Their number might have been increased with advantage.

MANUAL OF OTOLOGY. By Gorham Bacon, A.M., M.D., and Clarence John Blake, M.D. Second Edition, Revised and Enlarged. New York and Philadelphia: Lea Brothers & Co. 1900.

This small manual on disease of the ear has reached its second edition in less than two years. In preparing the new edition, an effort has been made to bring the matter up to date without altering the character and scope of the work. Some twenty-five pages of new matter have been added, due to more extended consideration of the Schwartze-Stacke operation. The work is intended especially for undergraduates, and it opens with an excellent introductory chapter in which we have the limitations of the work of the aurist described, and withal an excellent statement of the relations of specialists to general practitioners. At most, a text-book as compact as this can only give the outline of the subject, and the authors express the hope that it will stimulate both the undergraduate and practitioner to a more extended reading in this department. The dissection of the organ of hearing is especially commended as being the only accurate method of comprehending its relations, and at the same time as being a great help in fixing those landmarks so essential in any operative work on these parts. Some knowledge of acoustics is said to be necessary as furnishing an understanding of sound transmission within the ear itself. The minuteness of the parts and the special training of the hand and eye, essential to observation and manipulation in such a field, are said to justify the creation of a specialty. The difficulty of appreciating the appearance of the normal drumhead is emphasized, as well as the importance of examining the ear during the progress of an exanthema in childhood.

The work opens with a brief account of the anatomy and physiology of the ear, with methods of examination. Then follows an account of the diseases of the drumhead and middle ear, those due to adenoid growths and enlarged tonsils; the relation of middle-ear disease to diseases of the nose; and also a careful description of infection extending from the ear and involving the meninges.

ATLAS AND EPITOME OF GYNECOLOGY. By Dr. Oscar Schaeffer. Authorized Translation from the Second Revised and Enlarged German Edition. Edited by Richard C. Norris, A.M., M.D. Price, $3.50. Philadelphia: W. B. Saunders & Co. 1900.

This is a continuation of the series of atlases issued by Saunders & Co. It is the same size as and of uniform binding with those that have gone before. It contains 272 pages of text, 99 plates having 207 colored illustrations, and 62 line work and half-tone figures printed in the text. The ambitious part of the

work is the plates; they are strikingly true to nature, some of them being taken directly from the living patient, others from specimens removed post-mortem and after operations. The work as a whole occupies a position midway between a quiz compend and a complete work on gynecology. It certainly goes as far as a work can go in printing illustrations to elucidate the difficult problems of gynecology. The author in the preface to the first edition says: "If the entire work were carried out upon a purely diagrammatic basis, it would probably be more readily grasped by the majority of readers; not every one, however, possesses the gift of translating the pictured rules into living clinical entities. On the other hand, the strict reproduction of anatomical preparations renders difficult that clear representation which is necessary to sift the essential from the non-essential facts." The author has, in many cases, combined both methods of illustration, reenforcing the pictures of specimens by diagrammatic drawings.

The text is divided into two parts—a continuous narrative statement of the various conditions treated of, written from a practical standpoint, and a description of the plates. An etiological arrangement is so far as possible adhered to. Five main groups are followed: (1) Anomalies of formation, and arrested development; (2) changes of shape and position; (3) inflammatory and natural disturbances; (4) injuries and their consequences; (5) new growths.

Clinical Examination of the Urine and Urinary Diagnosis. By J. B. Ogden, M.D. Price, $3.00. Philadelphia: W. B. Saunders & Co. 1900.

The subtitle of this work states that it is a clinical guide for the use of practitioners and students of medicine and surgery. The author says in his preface that an effort has been made to present a chemistry of the urine in its relation to physiologic processes, giving the most perfect working methods. In Part I the ordinary chemical and microscopic methods are described in detail, and Part II pays especial attention to urinary diagnosis. Both the subject of diagnosis and the physical examination of the urine are presented in the same volume. There is a short introduction on the various theories of urinary secretion, and a description of the constituents of normal urine, together with its physical properties. There is comparatively little that has been added to our knowledge of urea and uric acid. The chief increment in our knowledge of the organic constituents of the urine is found in the so-called xanthin bases. Practically nothing has been added of late years to our knowledge of the inorganic constituents of normal urine. Among the abnormal constituents which receive more extended mention is globulin, albumoses, peptone, and nucleoalbumin. There is extended discussion of the newer forms of carbohydrates, such as levulose, lactose, and glycuronic acid.

The remaining portion of the work is taken up with a description of the microscopical findings and urinary sediments, and a discussion of the clinical diagnosis of diseases of the kidneys.

The work closes with a chapter on the urine, in diseases other than those of the urinary tract. The latter will be found of considerable service.

LEADING ARTICLES.

SPINAL ANESTHESIA.

We call attention in another portion of this number to an abstract of an article by Dr. J. B. Murphy, describing a number of cases in which this new method was employed. Early last year, when accounts reached us of its occasional employment in the clinics of Paris, it was received with considerable reservation in this country, and only occasional tentative efforts were made to employ the method, and that in cases where general anesthesia was contra-indicated. The brilliant report of Tuffier to the International Medical Congress, in which he claimed to have employed the method in over one hundred and fifty cases without serious results, and to have obtained perfect anesthesia in all cases, has excited wide-spread interest in the surgical world, and a desire on the part of surgeons to employ this method which in some cases borders on rashness.

We would certainly urge surgeons to go slow with this new method. Its possible dangers, while as yet largely theoretical, are such that it should only be employed in large clinics in which ample means of bacteriological research are at hand, and undoubtedly only in selected cases in which the dangers of general anesthesia are considerable. It may be that in time these objections will prove to be groundless, but by that time the spinal anesthesia will have established itself on a firm foundation as a recognized surgical procedure. Perhaps it may supersede general anesthesia in all cases for operation below the diaphragm, but this we very much doubt.

It is to be remembered that this operation of injecting a solution of cocaine into the subarachnoid space of the spinal cord is a major operation—that is, unless carefully carried out it may involve danger to life. The technique of the injections is by no means as simple as might be inferred from the descriptions, or, indeed, from the observation of an occasional injection, as made in the clinic. Sometimes it is a very easy matter to penetrate the spinal canal, and again it is not. Undoubtedly, the position of the patient has something to do with this. The most favorable position for entering the canal is when the patient is sitting and bent forward, the spine being flexed. In this position the spaces between the arches of the lumbar

vertebræ are separated as widely as possible, and the needle enters the spinal canal, having only to penetrate the structures between the vertebræ. The distance of the spinal canal from the surface varies much in different persons. In fat individuals, or those with well-developed muscles, the distance is considerable from the external surface, and in this latter class of cases it is not always easy to be sure of the anatomical landmarks. There may be a partial ankylosis, or a rotation of the lumbar vertebræ, or rigidity of the spinal muscles, all of which conditions prevent that normal flexion in the lumbar portion of the spine necessary to separate the laminæ so that the needle will readily penetrate the canal.

The immediate dangers of subarachnoid injection of solutions of cocaine seem to be slight. Several deaths have been reported after this method of anesthesia, but a careful analysis does not show that they were directly due to the local anesthetic. Depression not infrequently follows, due to the toxic action of the cocaine. This is to be expected, as the same effects follow cocaine when applied in the nose or other portion of the body in which it is absorbed into the circulation. We should expect more rapid and more pronounced toxic effects from the injection of the dose into the subarachnoid space, because of its rapid absorption. As to the remote dangers, practically nothing is known. It may be that weeks or months after this injection degenerative changes will be set up. This latter supposition, however, is improbable, as the injection is not made into the spinal cord but merely into the subarachnoid space, and is there brought in contact with the nerves after they emerge from the spinal cord. The efficiency of the anesthesia is due to the fact that the nerve sheaths are there thinnest, and all of the sensory nerves are gathered together in a small space. With such anatomical peculiarities a comparatively small dose of cocaine is capable of producing profound and lengthy anesthesia. The dangers from the puncture itself are practically *nil*. There are no structures of importance in this region that are likely to be injured, and no large vessels which could be punctured and give rise to hemorrhage of any consequence. Lumbar puncture is in effect what it is, and that has been employed with sufficient frequency to have established its comparative innocence. To be sure, a number of cases of death have followed lumbar puncture, but these were cases of meningitis or other conditions in which intracranial and intraspinal pressure was greatly increased, and there was proportionately rapid evacuation of fluid. In the case of lumbar puncture made for introducing a fluid, only so much of the cerebrospinal fluid is allowed to escape

through the needle as is sufficient to establish the fact that the end of the instrument is in the subarachnoid space.

A possible source of danger is in the contamination by pathogenic germs of the injected fluid. Boiling a solution of cocaine destroys or modifies its anesthetic properties. The cocaine is not decomposed, and its toxic effects are not altered, but there is some peculiar change in its molecular arrangement by which the anesthetic effect is lost. So far as we now know, a sterile solution of cocaine, having its full physiological effect, cannot be prepared. Discontinuous heating to a temperature of 160° F. is said to furnish the most efficient means of sterilizing, but, as is well known, such a temperature will not destroy the spores of anthrax or other resistant germs. Many pathogenic germs are, of course, destroyed by such a temperature, and it is better to use one that is so treated than one in which no effort at sterilization has been made. It is unnecessary to discuss here the possibility of the introduction of pathogenic germs; that may happen in any fluid that is not sterile, and the cocaine solution cannot be sterilized. The probability of introducing pathogenic germs, if reasonable care is taken in preparing the solution, is not great, but still the danger exists, and it should be taken into account in employing the method. One fact is to be borne in mind in this operation, and that is that we may introduce into a very favorable culture medium a germ. In ordinary wounds the tissues are capable of taking care of a certain number of germs, depending, of course, upon their virulence and other factors. It is a proven fact that the serum of the blood, and perhaps the tissues, have a certain antiseptic power. It is indeed possible that the corpuscular elements, notably the leucocytes, contribute to protect the organism from the invasion of pathogenic germs. The cerebrospinal fluid probably has no such power. Its chemical constitution shows that it is an admirable culture medium, and a germ once introduced in these situations would meet with most favorable conditions for its development.

Spinal anesthesia is an attractive surgical topic, and one that is destined to lead to a method which will add considerably to the safety of anesthesia. Of this we feel quite certain, and it is for this reason that we earnestly urge conservatism in the use of the method, that accidents may be avoided. It would be most unfortunate at this time to have a series of disastrous results, which would lead to the abandonment of the procedure perhaps for a number of years, until some one has the courage to take it up and carefully and conservatively work out all the details.

Eucaine B is only about one-third as toxic as cocaine, and while

its anesthetic properties are somewhat less, it is probable that it is quite sufficient to meet the indications in spinal anesthesia. Eucaine, we understand, has been employed unsuccessfully. Dr. Murphy has used it in one case, and in this anesthesia was not successful. He used a two-per-cent solution, but this was too weak to give the desired anesthetic effect. It is possible that with a four-per-cent solution better results might have been reached. One great advantage is that eucaine is not altered by boiling, and thus can be perfectly sterilized. There is also the probability that other substances can be added to cocaine or eucaine solutions which may increase their anesthetic efficiency. A solution of suprarenal extract which can be perfectly sterilized might be added to the cocaine solution with possible advantage. It causes a contraction of the blood-vessels, and thus to a considerable extent would interfere with the absorption of the cocaine after injection, and prolong the anesthetic effect. The effect of this drug is to contract the peripheral arterioles, and in this way it would diminish shock, and by delaying the action of the cocaine would tend to lessen the toxic effects of the latter drug. This suggestion is entirely theoretical, but it is one of the possibilities in the method that occurs to us.

We certainly deprecate haste in the adoption of the new method of anesthesia, as anything like its extensive application by the general practitioner and surgeon will unquestionably result in disaster. This would give a bad name at the outset to what promises to be a valuable addition to medical science.

EDITORIAL COMMENT.

A METHOD OF LIMITING THE DISPENSARY EVIL.

We have always maintained that the medical profession was responsible for much of the dispensary evil. No dispensary or hospital can be conducted without the active cooperation of physicians. Philanthropy has long availed itself of the gratuitous services of medical men in extending its charities, and to the everlastiug discredit of the profession it must be said that for professional advertising they have lent themselves to such schemes. It may be questioned whether open advertising might not have resulted in less harm than quasi-respectable connection with unneeded charities, clubs, and health insurance associations that has been resorted to. The purpose of this was to avoid starvation or to extend an already growing practice. There has always been a glamour about the hospital and teaching for the man on the outside, until now a name can scarcely be found in the medical directory which has less than from three to fifteen appointments appended.

Many reason very incorrectly on this subject. They note a man with a teaching or hospital appointment who has a large consultation practice and presumably a large income. Forthwith it is assumed that these are necessarily related; such elements as energy, skill, learning, and natural adaptability are not taken into consideration. Long experience enables us to say positively that comparatively few in our profession are benefited by such appointments. For the most part, the duties are discharged in a perfunctory manner, and practically no study is given the cases. Whatever advancement such men make is due to their private practice, in which financial rewards are the palpable stimulus for good work.

In large part the dispensary evil has been due to the want of business sense on the part of the profession. The aim of the beginner in medicine is to have a hospital appointment where he treats people free, and to have those who come to his office pay from five to ten dollars for a consultation. It has long been pointed out that a large proportion of the frequenters of dispensaries were mechanics, clerks, artisans, and laboring people receiving a weekly wage of ten to twenty dollars. These were in effect pauperized by the free dispensary. They realize the advautages of a well organized outpatient department in which the services of specialists can be secured *gratis*. It is proposed to turn this tide toward the young practitioner in the thickly settled neighborhood. It will not turn,

however, because the practitioner is not adequately equipped. They are too poor to pay the ten to twenty-five dollar fees of the internist, or ten dollars for a refraction, plus the cost of glasses. There is no provision for this class where they can secure special service at a price they can afford to pay.

It is this deficiency that is to be met by the pay dispensary. We know that such an institution is frowned upon by many in the profession, but, we think, unjustly. It would meet a want, and no harm can result where an honest service is given for compensation within the means of the person seeking help.

A plea is made for the pay dispensary by a New York physician who conducted a free dispensary for two years at an annual expense of $2000. The last year, 1715 patients applied for free treatment; only about ten per cent of these were properly free patients. Three per cent were refused treatment. The remaining 87 per cent belonged to the wage-earning class who could afford to pay for treatment. The free dispensary closed its doors, and a "sanatorium" took its place, with a conspicuous sign over its door announcing that it was a non-charitable institution. During the year 1555 eye patients alone were treated, each paying from fifty cents to two dollars for examination, and from one to five dollars a week for treatment. The physician received nearly $3500 for his services. The moral increment in self-respect on the part of the patients cannot be estimated.

The pay dispensary is the remedy for the free dispensary abuse. It is a means by which superior medical service can be placed within the reach of those of moderate means. As a business proposition, it has much to commend it.

EMPLOYERS' LIABILITY ACTS.

Those who have watched the steady increase in the volume of litigation for personal injuries in this country cannot but feel that some statutory modification will be necessary, both in the interests of employer and employee. It is stated that more than one-half of the total number of suits constituting the enormous mass of litigation in Cook County (Chicago) are personal injury cases. These evils have become so pronounced in both Germany and England that in the former country an employers' liability act was passed which in effect makes every employer responsible to his servant, whether the latter is negligent or not. The mere fact that he was injured in the line of his employment or on the premises of his

employer is sufficient to give him a claim. All that it is necessary to show is the fact of injury; the gravity or duration is all that remains to be considered in case a dispute arises. We understand that this law has worked well in Germany.

The Workmen's Compensation Act, passed by the English Parliament in 1897, is subject to some severe criticism by Albert Benthall (*Lancet*, Aug. 18, 1900). On the whole, he says, the act has been satisfactory, as under it employers have been able to obtain insurance at moderate rates, and workmen have been promptly and effectively relieved. Certain abuses have crept into the law, and it is sadly in need of amendment. The original law provided for skilled and impartial medical inspectors who would carefully assess the damages against employers, protecting the latter from malingering, thus giving no encouragement to workmen who were not injured to attempt to levy a species of blackmail against employers. The English judges have neglected to avail themselves of this medical assistance, relying upon their knowledge of the medical sciences. In consequence the actual operation of the law has put a premium upon malingering.

This has given rise to some very singular decisions. Thus, a workman who had an attack of gout in his hand claimed that it was caused by jarring the hand. An instrument which he held for another man to strike turned partially in his hand. He claimed that the jarring caused the gout. Another workman suffering from Bright's disease sustained a slight bruise on the shin. In consequence an abscess formed, and the employer was held to be liable. A workman engaged as a bricklayer alleged that by touching a broken incandescent light he had sustained a shock that resulted in permanent disability. A hospital surgeon stated that they had not heard anything about any accident, but had treated the man for a peripheral neuritis of alcoholic origin. The man was a typical chronic alcoholic, and it was explained by the medical and electrical experts that a one-hundred ampere current could not cause the disability. The judge remarked that they killed people with electricity, and could not be brought to see that there was a difference between a one-huudred ampere current with a pressure of one hundred volts and a pressure of three thousand volts. The workman was awarded one pound a week for life.

The English act has failed, not so much through inherent defects as through faulty interpretation. Thus, the judges have held that if any preexisting injury or disability on the part of the employee is aggravated in the slightest degree by an accident, the employer

is subject to full liability. In consequence employers have become very cautious as to who they allow to enter their service, not employing men who have the slightest physical defects. This has resulted in throwing a large number of workmen out of employment who were really not incapacitated, and making them public charges.

FIREMEN'S CRAMP.

This is an occupation disorder, but is not included among the occupation neuroses. It is sometimes spoken of as a colic and again as a cramp, but muscular pains in the extremities are not infrequent. It is characterized by extreme prostration, congested conjunctivæ, extreme thirst, labored respiration, and an irregular or weak heart action. The horrors of the fireroom in an ocean-going steamer are almost indescribable, and it remained for the vivid pen of Daudet, in his story of "Jack," to depict what is sometimes described as a "hell on earth."

Willis Cummings (*Merck's Archives*, August, 1900) has had his attention strongly drawn to this matter while acting as physician to steamers going to the tropics. The men who are engaged to do this work usually show the effects of dissipation before coming on board. The stock mixture kept for this disorder resembles "Sun Cholera Mixture." It is composed of anodynes and carminatives, which lead to gastric disturbances and constipation. The writer's explanation as to the production of this colic is that there is an excessive loss of fluids and solids, due to the profuse sweating, with a reflex vasomotor paralysis of the abdominal circulation and a spasmodic condition of the muscles. In a crude way he attempted to estimate this loss and to supply a water which contains a sufficient quantity of solids to supply the waste. To one gallon of water were added:

Calcium phosphate	256 grains.
Sodium phosphate	256 grains.
Potassium phosphate	256 grains.

With an excess of orthophosphoric acid. Four ounces of this solution was put into nine gallons of water; to this was added some oatmeal and ice, if available. Each man was given a gallon of the acidulated water during four hours, the phosphates in solution amounting to three and one-half drachms. After this treatment was instituted the cramps and colic immediately disappeared. The solution was very highly appreciated by the men, and it resulted in a diminution of the desire for alcoholics, so common among this class of men.

The observation is certainly an interesting one and calls attention to a factor too often neglected by those who have to exert themselves in high temperatures. It is only of late that we have come to appreciate the value of saline infusions in the treatment of shock and hemorrhage, and we are not quite sure that the treatment would not be applicable to the forms of heat exhaustion of which this so-called firemen's cramp is probably a forerunner. It is probably due to a disturbance of the balance of the circulation by which the fluids and the inorganic salts are lost, in undue proportion. It is a common observation that Vichy or other saline waters quench thirst much more efficiently than does plain water.

COEDUCATION IN THE UNIVERSITY OF CHICAGO.

A number of medical colleges have adopted coeducation, women being matriculated on the same terms and sitting in the same classes as men. We know of no extended discussion on the subject of coeducation in medical colleges, but the individual experiences of certain institutions have not been altogether favorable to the association of women and men in the study of medicine. That this subject is by no means a settled one is shown by the fact that coeducation is to be made a subject for discussion at the coming congregation of the University of Chicago faculty. At the inception of the Chicago University it was designed that it should be a coeducational institution, and it has been carried on along these lines ever since it was started. The mere fact that the subject is proposed for discussion shows that there is a feeling that coeducation, as carried out in the university, has not been an unqualified success. Undoubtedly a majority of the faculty will be opposed to making a chauge, and a complete separation would be absolutely impossible, as it would be beyond the financial resources of the university to duplicate the teaching force for all classes. It, however, is practical in some of the junior classes, as they are now so large that they could be easily divided into two sections.

Notwithstanding that the agitation for coeducation has been carried on for over a quarter of a century, the fact remains that the leading universities of this country and abroad are practically for men alone. Yale and Princeton stand for an absolute separation of the sexes, and Harvard and Johns Hopkins practically so. Cambridge and Oxford have much the same attitude as Harvard.

We have always believed that the objections to coeducation were more fanciful than real, particularly as applied to the education of medical women. If women are to practice medicine, they should be

allowed the freest privileges in its study and every advantage that can possibly be given them. After their college course is finished they must of necessity come in contact with the profession, meet other physicians in consultation, and if they have hospital or dispensary work they must be brought very intimately in contact with their professional brothers. There is no reason why this association should begin after they leave college. The fact that the older institutions have not adopted coeducation to any considerable extent is no argument against it. It is simply due to the fact that their traditions are against it, and the older an institution the more conservative it is. We believe that coeducation is destined to maintain its position in spite of temporary defection.

HOSPITAL ABUSES IN FRANCE.

We have frequently called attention to the dispensary and hospital abuses in this country, and have also referred to what French writers have described as a *crise médicale* in France, by which they understand the diminished incomes and the increasing number of practitioners. In effect, it is practically impossible for a young practitioner of medicine to begin his professional career anywhere in France with any hope of securing a living income. We have repeatedly called attention to the development of the same conditions in this country, though up to the present the unsettled portions of the country that were fertile have rapidly absorbed the excess of medical men. This condition no longer obtains, as practically all good land available for free entry has been taken up. We have not suffered to the same extent from the abuse of medical charity that France has, where the system of public medical charities has been so complete that the French people have come to look upon free treatment as a natural right whether they are paupers or not. A writer in a recent number of *Écho Médical* gives a number of instances of such hospital abuse. Many of these were rich people or those in receipt of large incomes, who applied to the free hospitals and dispensaries for operations and treatment. So extraordinary have the demands become upon the public medical service that one physician states that he was summoned 337 times to attend patients who were not sick. He also learned that cod-liver oil which had been prescribed for a sick child was used to fill lamps. Each year there are about fifty thousand births in Paris, of which eighteen thousand are conducted free of charge by the regular charity physicians.

It is a common experience of practitioners in the city of Chicago

that they are unable to find a bed for some deserving poor person. The hospitals report that their available accommodations are quite filled. Upon inquiry it will be found that many of the free beds are filled by patients who should pay something for their care and medical attendance. In every case where a hospital bed is occupied by a patient who has means, that much is taken from the deserving poor. Of course, the evil of free hospital beds from the standpoint of the profession is not nearly as great as that from the dispensaries, yet the evils of indiscriminate medical charity have so long been pointed out that we feel that it cannot be too often brought to the attention of medical men, as it is not alone destructive to the profession, but is contrary to the best interests of the sick poor and tends to the moral debasement of those who are able to pay and yet secure charity under false pretenses.

ESSENCE OF GINGER AS AN INTOXICANT.

Attention has recently been called to a couple of cases of amblyopia due to excessive use of essence of ginger. This may be a faulty conclusion, as it is claimed by some writers that the bulk of the essence of ginger that is sold in a domestic way contains little or no ginger, but is merely a tincture of red pepper, often prepared with the cheaper grades of wood alcohol. It would seem that the term "ginger amblyopia" was a misnomer, and that in effect we are dealing with a very different kind of intoxication. It is by no means certain that the toxic principle in these tinctures is red pepper, as wood alcohol is known to be a very destructive agent.

A recent case reported is that by E. Stieren in the *Pennsylvania Medical Journal* for September, 1900. The patient was 36 years of age, free from previous illness. He had been a moderate user of tobacco and a periodic alcoholic, the attacks coming on about every six weeks and lasting from three to four days. He was seen October 15, 1899, and appeared to be totally blind. He had been drinking heavily, and on the following day, finding himself in a community in which no liquor could be obtained, he purchased a dozen bottles of Jamaica ginger containing about one ounce each. The entire dozen were taken before noon, the first four diluted with water, and the remaining eight undiluted. About noon he passed into a drunken stupor, and awakened about 3 P.M., totally blind, but with no other symptoms except some gastric uneasiness and a dull headache. When seen at six o'clock the same day the pupils were widely dilated, not reacting to light or accommodation. The eyes were widely open and the eyeballs were

moving irregularly. The conjunctivæ were slightly injected, the ocular tension was unchanged, and the media were clear. There was no change in the disks or vessels beyond a slight amount of retinal edema. Shadows could be perceived at twelve inches, and an incandescent light appeared red. The cornea was quite insensitive. Treatment consisted of immediate confinement to bed in a darkened room, with hot foot-bath, calomel, and pilocarpine. The following morning at nine o'clock the patient was able to count fingers at ten inches. He continued to improve, and on the fifth day was allowed to go out, having a vision of 20–30. At no time were the ophthalmoscopic changes different from that described. On the fifth day no scotoma nor narrowing of the field could be demonstrated. The patient had a hypermetropia, which was corrected, and ultimately a full restoration of vision. He was seen some five months later, at which time there was no alteration of vision and no return of the difficulty.

RELATION OF PHYSICIAN TO LAITY.

In the *Cleveland Journal of Medicine* for August, 1900, is an editorial discussing the response to calls on the part of physicians. It is labeled "A Legal Opinion," and in it there is a discussion of the relation of the physician toward his clients. The question has sometimes been raised as to whether there is any legal obligation on the part of a physician to respond to a call which can be made the basis of an action for damages. The writer of this opinion believes that there is not, and says that the question has perhaps arisen from the fact that in the law a contract is said to consist of an offer and its acceptance. The doctor's sign is regarded as an offer of professional services, and the call on the part of the patient as its acceptance. The writer says that such a view is not correct, as the sign is not an offer of services unconditionally, nor is the call of the patient an unconditional acceptance. In closing, the writer says any other view of the physician's duty would lead to intolerable inconveniences and be a most unwarranted invasion of his personal rights. Public carriers may be compelled to carry all fit persons as passengers upon a tender of the proper fare, but the practice of medicine is not based upon a franchise granted by the people any more than the keeping of a store or the practice of law, and the State would have no more right to make contracts for the one than the other.

We have referred to this editorial because the fact that the matter is discussed at all shows that there is an increasing tendency to regard the practice of medicine as in some way affected with

a public use. This, in part, is due to the legislation regulating the practice of medicine. Such laws do not confer a right which formerly did not exist, but are really limitations of a common law right. Such laws are passed not in the interest of physicians, but in the interests of their patients and of the general public, protecting the latter from incompetents and charlatans. It is a real inhibition upon a common law right, and in such respects is exactly like a license to keep a saloon, which is in fact a tax upon a special occupation and confers no rights which have not always existed. The law does not attempt to limit the number of physicians or say who shall study medicine. The public, however, are inclined to look upon such a license as in effect setting apart a certain occupation for a certain class of men and preserving it for them. By so doing they seem to think that the occupation is in some way connected with the public service. The relation between physician and patient is a private matter which the law has never attempted to regulate.

LARYNGEAL FATIGUE SYMPTOMS IN NEURASTHENIA.

Clarence C. Rice, in the *New York Medical Journal* of September 15, 1900, reports two cases under the title, "Were these unusual cases of partial paralysis of the vocal bands caused by overuse of the telephone?" One was a small man, of nervous temperament, to be classed among the neurasthenics. The other was an older and stouter man whose nervous system seemed to be pretty nearly normal. In the more nervous individual, while showing sufficient power to approximate the cords, they had lost their ability to straighten out and come in contact with each other throughout three-fourths of their entire length. The thyroarytenoid muscles were fatigued, but not paralyzed. In addition to this lack of straightening power, the large lateral muscles showed an incapacity for sustained effort, for unless the patient especially exerted himself, these cartilages fell apart directly after meeting. During the utterance of any sound the vocal bands trembled. The voice was very uneven. The condition had existed for nearly two months. The hoarseness was somewhat relieved by the patient pitching his voice somewhat below the ordinary conversational tone. The muscular weakness was bilateral, and there was little or no change in the mucous membrane. Both of these patients used the telephone frequently.

In the second case reported there were some local changes in the larynx, evidently produced by the strained position of the neck in

using the phone. In this case also there was the same unevenness of the voice, changing suddenly in pitch, and there was the same trembling of the vocal bands upon approximation. The reporter recognizes the essential condition as a fatigue neurosis, when he says that the appearance closely resembled that which follows extreme use of the voice in shouting, singing, or speaking out-of-doors. The peculiarity of the case is that it persisted for a long time and was associated with the general picture of neurasthenia.

We especially call attention to this article by Dr. Rice, because it is such a clear picture of the ordinary fatigue symptoms which are present in neurasthenia. It is the same want of muscular innervation which leads to the tremor of the hands in this disease, to pain about the eyes from fatigue of the eye muscles, to pain in the back because of strain upon the erector spinæ muscles; indeed, any muscle in the body may be affected with the fatigue symptom.

THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

This meeting will be held December 26, 27, 28, and 29, in the city of Havana, under the presidency of Dr. Juan Santos Fernandez. The secretary is Dr. Tomas Coronado. This meeting bids fair to be one of the most important medical gatherings held during the current year in the Western hemisphere. The first Pan-American Congress, held under the able presidency of the late Dr. Pepper, was a success from a scientific standpoint, and we have no doubt that the present meeting will be quite equal to its predecessors. Additional interest will be lent to the meeting from the fact that it is held in Havana. Increased interest will be felt by the profession from the fact that we have added subtropical territory to our extensive domains, and have thereby acquired greater responsibility in the management of infectious and tropical diseases. The Pan-American Congress will largely discuss these diseases and the hygienic problems incident to a hot climate. A general invitation has been extended to teachers and writers of the profession in general of the United States to attend this congress, and it is to be hoped that the invitation will be met with wide acceptance. The constituent countries are the Danish, French, Dutch, and English Antilles, Cuba and Porto Rico, Argentine Republic, Bolivia, Brazil, Canada, Chili, Columbia, Costa Rica, San Domingo, Ecuador, United States, Guatemala, Hayti, Hawaii, Honduras, Mexico, Nicaragua, Paraguay, Peru, San Salvador, Uruguay, and Venezuela.

ABSTRACTS.

MEDICINE.

Statistics of Heat-stroke in India.—

W. J. Buchanan, in *The Lancet* of September 15, 1900, discusses Dr. Sambon's "infectious" theory of the origin of heat-stroke, which has been quoted approvingly by many recent writers. Dr. Sambon's conclusions are largely based upon studies made in India, and his reasons for thinking that heat-stroke is dependent upon infection are that new arrivals are more apt to be attacked than natives or residents; it is not always found in the warmest regions; it prevails in the lowest regions, in coast districts or in the valleys of great rivers; its altitudinal range is even more restricted than that of yellow fever.

The statistics of the British army in India show that newcomers are most frequently attacked. This is due to the recklessness of the new arrival in any hot country. To a great extent acclimatization means experience, education, and intelligent adaptation of habits. The tables show that newcomers and old residents are the most liable to suffer from great and prolonged heat, and Europeans are at their best in resisting these influences in the intermediate years of their residence. The writer flatly questions the statement that the warmest regions do not have the largest proportion of heat-stroke. The statistics show that on the northwest frontier in the Punjab and Sindh the heat is the fiercest of any part of India. It is precisely these regions that show the highest percentage of sunstroke. The restricted altitudinal range of heat-stroke is also not borne out by statistics. These are arbitrarily fixed by Dr. Sambon at 600 feet, while the facts show that two stations that have the largest proportion of heat-stroke are at altitudes of 1165 and 1100 feet respectively. On the contrary, certain low-lying stations on the coast are comparatively free from heat-stroke. Height has little influence *per se* until an elevation is reached sufficient to give a coolness to the atmosphere as found in the stations 5000 feet above the sea level.

In conclusion, the writer says that the British army in India shows that heat-stroke is most prevalent where heat is greatest, and it will require much more evidence than has yet been produced

to make those who have had experience with the disease in India accept a microbial or any other cause which seeks to minimize the great and predominating influence of fierce and continuous heat. While looking upon heat as the most common factor, important predisposing causes are found in the age, length of residence, occupation, exposure, unsuitable clothing, intemperance, fever, fatigue, want of ventilation, and previous illness.

Chemical Examination of the Feces for Clinical Purposes.—

A. E. Austin, in the *Philadelphia Medical Journal* of September 22, 1900, says that the examination of discharges from the bowels have received too little attention, in part probably due to the disagreeable nature of the manipulations required, and also from the wide-spread belief that very little positive information is to be gained from the examination. A practical method of collection is to give the patient a weighed Mason fruit-jar, in which they may be passed for twenty-four hours. When feces are examined, they are found to consist of three elements: First, the undigested portions of food; secondly, side products produced during the course of digestion; and thirdly, constituents arising from the secretions and excretions of the intestinal mucous membrane. The composition is varied by the nature of the food, a vegetable diet increasing the quantity and a meat diet decreasing it. The commonest constituents are muscle fiber, connective tissue, particles of casein, starch, fats, cellulose, and nuclein. These all come from the food. Among the excretions we have mucin, colic acid, and cholesterin, together with the products of decomposition, which are skatol, indol, and fatty acids. Chlorides are not found, but the insoluble ammonium magnesium phosphate is quite common, together with the neutral calcium phosphate and magnesium phosphate. Bacteria in great numbers are found, together with stercobilin, but no bilirubin or biliverdin, unless there is present undue motility.

The microscopic examination, as a rule, shows very little of value, but chemical analysis may be quite as valuable as examination of stomach contents. The removal of the stomach, which is not followed by severe symptoms, shows the importance of intestinal digestion in nutrition. The importance of the pancreas is shown by the grave symptoms caused by its removal, and one means of estimating the efficiency of pancreatic digestion is the examination of the feces.

Such examination without a test meal would be practically worthless, and the writer suggests a definite ration to be followed

for several days: Fifteen ounces of pease-meal, seven ounces of rice flour, and four ounces of butter. This gives approximately Voit's diet required by an adult, namely, 100 grammes of albumin, 100 grammes of fat, and 400 grammes of carbohydrates. The estimation of nitrogen should theoretically determine the efficiency of pancreatic digestion. If the nitrogen is increased, it denotes a failure of absorption, which may, however, be due to increased motility. If the latter, it would be confirmed by finding an increased amount of starch and sugar. Distillation gives us the amount of skatol and indol, which is a valuable index to the amount of fermentation taking place in the intestine.

Disturbance of the Stomach Due to Oral Sepsis.—

A clinical lecture by William Hunter, in the *Clinical Journal* of September 12, 1900, calls attention to a condition which has received very little notice either in England or on the Continent, but is often referred to in this country. His attention was first drawn to it in connection with the pathology of anemia, and for the past twelve years he has been giving a good deal of study to the subject, during which time he has accumulated a considerable number of observations illustrating the important relation of diseased conditions of the mouth and teeth to general medicine. One of the most striking of these observations was that of a lady who was thought to be suffering from gastric cancer. She had pain and nausea extending over some ten months; she was sallow, cachectic, and thin. There was a constant bitter taste in the mouth and an inability to taste food. The nausea had no relation to food, but came on usually in the morning. Examination of the mouth showed an absence of all the teeth except four, with upper and lower artificial dentures. The gums were clean, but the four teeth were black, and three of them were loose. The gum was found to be suppurating around all of these teeth. Removal of the teeth was followed by an immediate relief of all the symptoms; the appetite returned, the bad taste in the mouth ceased, and the natural taste of food returned. At the end of three days there was a relapse, and three weeks later an examination of vomited matter showed blood fibrin, leucocytes, some gastric cells, and pus organisms. The diagnosis of septic gastritis was made. Salicylic acid was given in three-grain doses, with immediate improvement in the symptoms. Three months later the patient had gained twenty pounds in weight, and there had been no return of the sickness. The writer believes that the septic gastritis was due to infection from the mouth.

The case demonstrates a relationship between dental necrosis, gingivitis, and gastric catarrh. There is a limit to the capacity of the stomach to resist indefinitely the presence of pus organisms. The antiseptic power of the stomach is largely due to the presence of free hydrochloric acid, and this substance progressively decreases in inflammatory and catarrhal conditions of the organ. These latter states are induced by the pus organisms, and a constant source of danger is infection from the mouth. For a long time the resistance of the stomach may prevail, but from some accidental condition the infection develops in the organ, and the process once set up perpetuates itself.

A Form of Faucial Inflammation Resembling Diphtheria.—

Francis Villy, in the *Medical Chronicle* for September, 1900, says that occasionally cases are met with that present a faucial condition strikingly like that due to the Klebs-Loeffler bacillus, yet the disease is not one of true diphtheria. He states that only four cases have come under his observation, and therefore he regards the disease as rare, as his position as assistant medical officer of the Southeastern Fever Hospital would have brought a larger number had it been common. The affection in question differs from true diphtheria in the fact that the local lesion has a tendency to gangrene, and what is commonly regarded as membrane is really part of a slough. Ulceration is found under the slough more common and extensive than is that under the exudation of diphtheria. The elevation of temperature is commonly greater than in diphtheria, and delirium is not uncommon. Paralysis never follows. Streptococcus pyogenes is the preponderating organism found in the throat. The disease is not at all affected by the administration of diphtheritic antitoxin.

In examining a patient affected with the disease a patch is seen upon each tonsil, white in color, with a clearly defined border. This patch is more friable than that of diphtheria, and it cannot be classed as membranous. It is seen to be practically continuous with the surrounding tissue and upon the same plane, though it is true that the diphtheritic membrane sometimes presents this characteristic. After separation of the diphtheritic membrane, the surface underneath is commonly smooth, and if ulcerated, only superficially so, while in the disease in question ulceration is a marked feature. The temperature is much more protracted than in true diphtheria. In three of the author's four cases well marked delirium occurred. The lungs were unaffected except in one case. The pulse varied

in rapidity with the temperature, and its rate became steady and normal as soon as the fever subsided. In all, the cultures from the throat gave a preponderating growth of the streptococcus pyogenes. In one patient, with coincident empyema, the same organism was found in the chest. A remaining point of differentiation which the writer lays great stress upon is that the diphtheritic antitoxin has no influence whatever in the course of the disease. It is not claimed that this disease is a specific lesion, as the streptococcus is found very often in diseased throats, and its virulence in different cases varies enormously. He thinks that scarlet fever is excluded from the fact that there was no rash, and none of the other clinical signs of this disease were present.

Relation of Occupation to Tuberculosis.—

W. Freudenthal, in the *Medical News* of September 15, 1900, says that statistics at the best are of doubtful accuracy in studying the relation of occupation to tuberculosis. The older writers laid great stress upon poor nutrition as the cause of this disease. He is inclined to attribute less to poor nutrition and more to other causes, which are numerous. Not infrequently well fed and well nourished individuals become tuberculous. On the other hand, it is conclusively shown that those who have limited or small incomes are prone to develop tuberculosis. In Hamburg, the mortality from tuberculosis among 1000 taxpayers with an income of more than 3500 marks was 1.07 per cent; with an income of 2000 to 3500 marks, 2.01 per cent; with an income of 1200 to 2000 marks, 2.64 per cent; with an income of 900 to 1200 marks, 3.93 per cent.

Freudenthal believes that more important than all other causes is that of occupation, though the greater density of population in the poorer districts and the increased danger of infection play an important part. He has analyzed 1576 cases of tuberculosis admitted to the Montefiore Home in New York; 1152 of these cases were males, of whom 389 were found to be tailors, operators, pressers, cloak-makers, cap-makers, and cutters. In other words, more than one-third of all the male consumptives were tailors and workers in allied trades. He believes that consumption is primarily a trophoneurotic affection, and it is only later that the invasion of the tubercle bacillus takes place. The atrophic condition of the nasal mucous membrane and the accumulation of mucus in the postnasal space, which is almost universal among tailors employed in sweat-shops, form an admirable infection atrium for the tubercle bacillus. He has especially examined the throat and nose in a number of cases

of consumption in which there were no complaints of trouble in these parts. A considerable proportion of the total number showed marked abnormalities of the nasal passage. A large proportion of consumptives suffer from some affection of the throat and nose. His general conclusion is in accordance with Flint's: "Occupation is an agency in the etiology of pulmonary tuberculosis, in so far as it is sedentary and involves confinement within doors. If it be said that this conclusion is in accordance with what is already known, I answer, that the correctness of the conclusion is thereby made the more certain."

Tuberculous Lymphadenitis.—

T. R. Crowder, in the *New York Medical Journal* of September 15–22, 1900, reports a case of tuberculous lymphadenitis with a clinical picture of pseudoleucemia. Briefly stated the findings in his case are: (1) Symmetrical hyperplastic lymphadenitis, of slow development and chronic course, beginning in the right cervical region, attended by enlargement of the spleen, slight irregular temperature, and general emaciation. (2) Clinical diagnosis of pseudoleucemia. (3) Moderate secondary anemia with a terminal leucocytosis of 19,000. (4) Termination by extensive peritoneal and visceral tuberculosis and final infection with the staphylococcus pyogenes aureus. (5) Post-mortem anatomical diagnosis of pseudoleucemia with enlargement of the cervical, axillary, mediastinal, peribronchial, and retroperitoneal glands, lymphoid nodules in the liver, spleen, and lungs, fibrinoplastic peritonitis; no evidence of old or recent tuberculosis in the lungs. (6) Histologically fibrous and cellular hyperplasia of the lymph glands and the spleen with areas of necrosis; tubercles in the liver, spleen, kidneys, and peritoneum. (7) Tubercle bacilli in the lymphatic glands, spleen, peritoneum, and in the lymphoid nodules of the liver and lungs; staphylococcus pyogenes aureus and albus in the peritoneal fluid, and albus in the lung. (8) Inoculation of pieces of the lymphatic glands into the peritoneal cavity of guinea-pigs is not a positive sign of tuberculosis; death from suppurative lesions after ten and seventeen days respectively.

A study of the findings in this case and of the entire subject does not warrant the view that all pseudoleucemias are tuberculous, but a tuberculosis of the lymph glands may give rise to the same symptoms and present the same anatomical conditions as are found in pseudoleucemia. Several tubercular examples have already been observed, and it is probable that further investigations will show

that a general tuberculosis of the lymph glands exists more frequently than has been supposed. The pseudoleucemia, as at present understood, is a symptom-complex of unknown etiology, and a subdivision of a heterogeneous class. A tuberculous lymphadenitis having the symptoms of a pseudoleucemia is simply a tuberculous pseudoleucemia. The enlargements present the symptom of ordinary lymphoma, and inoculations of susceptible animals often furnish the only evidence upon which a correct diagnosis is possible.

Erosions of the Stomach.—

E. Quintard, in the *Medical Record* of September 15, 1900, has an article upon this symptom-complex, which was first described by Max Einhorn in the *Medical Record* of June 23, 1894. Since that time the peculiar clinical character of the disorder has been recognized by Cohnheim, Sansoni, and Pariser. The symptoms in these cases resemble to a certain extent the round ulcer. When the stomachs of these patients are washed out during a fast, the wash-water is found to contain little pieces of mucous membrane. After a test breakfast the gastric filtrate of such patients gives a neutral reaction or else a slight acidity. There is an absence of free hydrochloric acid and little or no lactic acid, but in other respects the gastric secretion is normal and the motility of the stomach is good. Sansoni is of the opinion that the constant presence of these small pieces of superficial mucous membrane in the stomach washings, associated with lowered or absent hydrochloric acid, cancer being excluded, signifies a chronic superficial ulceration of the stomach.

A number of cases are reported by Quintard, and he comes to the conclusion that patients in whose stomach washings small pieces of gastric mucous membrane are repeatedly found, the size varying from two to seven centimeters, show that we are dealing with an erosion. Such erosions occur under varying pathological conditions, and the symptoms vary accordingly. The exact cause and pathology of such erosions are not definitely known. In the great majority of cases, at least, such patients give a definite clinical history distinct from that of round ulcer, or from the exulceratio simplex of Dieulafoy. Such cases should be regarded as a distinct class clinically and treated as such.

In the treatment of the affection, spraying with a 2-to-1000 solution of nitrate of silver by means of an Einhorn atomizer gives excellent results. Einhorn has of late reported excellent results from powdering the stomach with five grains of extract of suprarenal gland.

Queirolo's Method of Determining the Limits of the Stomach.—

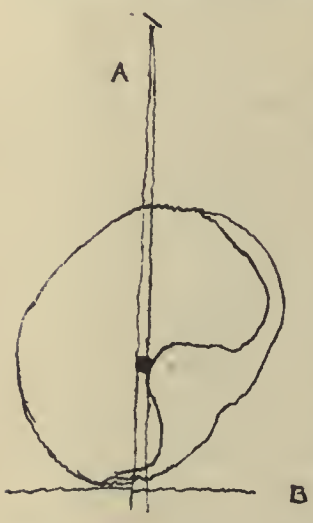
This method was described by the originator before the Congress for Internal Medicine held at Wiesbaden the current year (MEDICINE, August, 1900, p. 669). The apparatus constructed by Queirolo and Landis consists of a small bag filled with air which is introduced into the stomach. If the organ contains a certain amount of air it is found that percussiou anywhere over its surface compresses the air in this bag, the vibration being conducted to the surface through a hollow sound, and it is there connected with an ordinary recording drum or a feather, by which the movements of the diaphragm are magnified.

Paul Edel and Franz Volhard, in the *Deutsche Medicinische Wochenschrift* of August 30, 1900, have recently studied this new method of determining the outline of the stomach, and have come to the conclusion that it is an exceedingly satisfactory procedure. In several cases they have succeeded in outlining the stomach in cases where it was impossible to do so by the simple method of inflation with air or with carbon dioxide. In the use of the apparatus it was found that light percussion upon other portions of the abdomen would cause a slight vibration in the movable index. Whenever such percussion was made over the stomach, the vibrations were much greater, and this difference was easily and sharply defined by the edges of the organ. In one of the cases where they could not determine the outline of the stomach, due to pyloric insufficiency, by the CO_2 method, with Queirolo's apparatus the outlines of the organ were easily made out, and also the diagnosis of pyloric insufficiency. This opiuion was later confirmed by operation. They do not believe that the new method is a very marked improvement over other procedures that have been used a considerable length of time. In the diagnosis of tumor of the stomach there is nothing that recommends its use beyond that of distention with CO_2 and with air. The only objection to the new method is that it requires the introduction of an instrument into the stomach, which the distention with CO_2 does not require. The significant observation is that the limits of the stomach, as obtained by the new method, correspond in the main with the older methods.

A New Method of Determining Stenosis of the Esophagus.—

G. Holzknecht, in the *Deutsche Medicinische Wochenschrift* of September 6, 1900, says that the examination of a stenosed esophagus with the help of sounds containing quicksilver or lead, and the concurrent use of the *x*-ray, has afforded considerable information in the study of stricture of the esophagus. There are certain technical

difficulties that are very considerable in this method of examination. The patient who is not accustomed to the sound allows it to remain in position with difficulty, and it is almost impossible to have the patient at ease during examination. In some cases in which the patient has become accustomed to the passing of the sound, this difficulty will not be experienced. The method advocated by the writer is to prepare a more or less concentrated mixture of bismuth and water, the consistence depending upon the degree of stenosis, the idea being to have the mixture, when swallowed, arrested at the stenosed portion and a certain proportion of it pass through. At this period the skiagraph is taken, or the patient is submitted to the fluoroscope examination. The esophagus, lying as it does in front of the vertebræ, is in the deepest shadow furnished by the skeleton; consequently it is difficult to always determine the position of the sound, if it is used, or of the bismuth mixture. This is readily done by placing the patient as shown in the diagram, in which the entering rays pass in from A, to be received upon the plate B if a skiagraph is made; or, with the fluoroscope, the rays are made to penetrate the side, well toward the front, to emerge near the angle of the rib. The skiagraph, which the writer reproduces, made in this way shows the heart upon one side and the vertebræ upon the other, and between the two a dark shadow, indicating the masses of bismuth contained in the esophagus.



Rabic Nodules.—

V. Babes, in *La Presse Médicale* of September 8, 1900, has a further communication on the early diagnosis of rabies. His first article on this subject appeared in 1892, in which he described characteristic nodular changes in the medulla, spinal cord, and certain of the ganglia in rabies. These were more frequently noted in animals that had died of the disease than in those that had been killed during the early period of the malady. Van Gehuchten insists that these nodules are more frequently found in the ganglia than in the nerve centers. According to Babes, van Gehuchten has neglected to examine the bulb and the spinal cord, a procedure which he insists is necessary in studying these

histological changes. The proceeding is to cut the bulb and cord into small pieces and place in a solution of formalin, in alcohol. The following day it is fixed and cleared by acid fuchsin. It is decolorized by alcohol until the gray matter presents a rose tint, and cleared by oil of cloves; it is then mounted in Canada balsam. The whole procedure occupies from twenty-four to thirty hours. Prepared in this way and mounted, the medulla shows along the median raphe nodular enlargements due to embryonal tissue. These are also found in the nucleus of the pneumogastric, the hypoglossal, and the anterior cornu and the spinal cord. At the same time the Gasserian and other ganglia may be examined. The abundant experience of late years leads to the conclusion that if the medulla, spinal cord, and ganglia are free from nodules such as described, and also of leucocytic thrombi, in all probability the animal was not affected with rabies. If the animal has died a natural death, the absence of such findings is conclusive. If it has been killed during the early period of the disease, their absence furnishes strong probability that it was not affected with rabies.

Protective Inoculations in Plague.—

The August 24, 1900, issue of the *Public Health Reports* contains a translation of A. Calmette's paper recently read at the International Congress of Hygiene and Demography at Paris. Recent appearances of the plague in Hamburg, Glasgow, and San Francisco lend additional interest to the value of protective inoculations. The two principal methods that are employed are the Haffkine prophylactic and a serum. The Haffkine prophylactic is simply a culture of the plague bacillus which has been killed by the application of heat. It confers a much longer immunity than does the serum. The duration of the immunity is not definitely known, and may be from a few days to several months. The advantages in employing the Haffkine prophylactic are that it is practically free from cost and large quantities may be prepared in a short time. It generally causes some disturbance of the general health, and not infrequently a rise of temperature that may compel the individual to take to his bed. The Haffkine prophylactic retains its activity a much shorter time than does the serum; it is of no value after the disease has been contracted. The serum is the only remedy that has a power over the infection after the disease has been contracted.

The immunity conferred by the serum is absolute and immediate. The injection of the serum is not painful, it is never harmful, causes no inflammation, and it remains active for an indefinite time.

Its disadvantages are the short duration of immunity, the cost of producing serum, and the difficulty of producing it in sufficient quantity to vaccinate the population of an entire city every fourteen days.

A New Stethoscope for Measuring Heart Sounds.—

Dr. Bock, in the *Berliner Klinische Wochenschrift*, No. 23, 1900, describes a new stethoscope which is said to be of diagnostic value. It is a binaural instrument so constructed that the lumen may be narrowed in such a manner as to lessen the intensity of the sounds heard. The mechanism by which the lumen is narrowed has a scale by which the narrowing can be measured. With this instrument the author has determined that the various heart sounds have a constant relation to each other. Thus, if the first sound of the heart is placed at 40, the second pulmonary tone will be 18, and the second aortic sound will be 20. The use of the method is illustrated in the case of a man 39 years old, who complained of difficulty of breathing upon exertion. The ordinary physical examination of the heart and lungs was negative. There was no enlargement in the area of cardiac dulness, and the heart sounds were clear but weak. The normal relation of the heart sound was markedly altered, the first sound being 12, the second pulmonary sound 18, and the second aortic sound 24. The first sound had about one-half its normal intensity. From this sign alone it was possible to make a diagnosis of a weakened left ventricle.

Pathological Genesis of Jaundice.—

Browwicz, in the *Wiener Klinische Wochenschrift* of August 30, 1900, says that icterus is due to the increased function of normal liver cells brought about by varying causes, one of the most frequent being an increase in the amount of fat, from which is liberated a greater quantity of hemoglobin and especially the coloring matter of the blood. It is only a normal liver cell that can perform this function, but when it is carried to excess the coloring matter of the blood is deposited in the intercellular spaces, from which it is absorbed by the blood capillaries. Mechanical causes, which have been considered as of so great importance, take comparatively little part in the development of jaundice. In the absorption of the coloring matter of the bile, the blood capillaries play the most important part; the lymph channels only a comparatively limited part. All forms of icterus are accompanied by an increase of the bile, especially its coloring matter, due to increased activity of the liver cells.

Sepsis Without Fever.—

E. V. Hubbard, in *Pediatrics* of September 1, 1900, describes the case of a child six weeks old admitted to the Roosevelt Hospital. The baby was normal at birth, but three weeks later, without known cause, redness and swelling of the skin were first noted behind the left ear. Soon the skin over the whole body became tense and hot to the touch. No fever developed. One week later the symptoms abated and rapidly disappeared, without desquamation. Ten days before admission to the hospital a swelling appeared on the left elbow and later on both shins. Shortly afterward additional swellings were present, one on the left thigh and one in the lumbar region. The scrotum became involved two days before admission, the patient being brought to the hospital on account of the multiple swellings. The temperature at the time of admission was 99.4°, the pulse 148, and respirations 42. The blood examination gave hemoglobin 50 per cent, red blood cells 2,987,000, white cells 12,500. The usual treatment for infected wounds was instituted, free incision being employed, and a few days later the septic character of the case changed. With two exceptions, the temperature never rose above 100°.

The Value of the Serum Reaction in Tuberculosis.—

S. R. Arloing and Paul Courmont (*La Presse Médicale*, Sept. 1, 1900) have studied anew the serum reaction of tuberculous patients. They come to the conclusion that an agglutination of the tubercle bacillus by the serum of tuberculous patients is usually found very early in the course of the disease. It is commonly obtained in a dilution of from one to twenty to one to five. The maximum of intensity is found in those patients having discrete lesions, those suffering from geueralized tuberculosis not presenting the reaction in the same degree. This method of diaguosticating tuberculosis is the best at our command, as it is devoid of any possible danger to the patient, but, unfortunately, it will never be valuable clinically because of the complicated technique.

A Strict Milk Diet in Diabetes.—

Arthur Berger, in *Wiener Klinische Rundschau* of August 5, 1900, says that for years treatment of diabetes by a strict milk diet has been recommended. Kulz reported cases of cure after such a diet, while other observers have noted that the patients became worse. Cantani often employed a milk diet, but never observed improvement from it. In his article he gives tables of seven cases in which a milk diet was exclusively employed, and during its use the quan-

tity of urine, specific gravity, percentage, and total weight of sugar and the ferric chloride reaction are given. In one of the cases the use of a milk diet increased the amount of sugar. In several the ferric chloride reaction was increased under the milk, and in one the reaction was decreased.

SURGERY.

The Varying Types of Colles's Fracture.—

No fracture in the domain of surgery has received such extended discussion as that of the lower end of the radius, commonly known as Colles's fracture. The retention appliances that have been devised for this fracture are legion and cover various modifications of more or less complicated splints down to a simple strapping with adhesive plaster. Of late the contingent advocating simple massage without the application of any retentive dressing has increased. The statistics of certain methods have been quite misleading, and the occasional case or two that has been reported as successfully managed by a particular method are still more misleading.

A recent very valuable study is that of Dr. E. A. Codman in the *Boston Medical and Surgical Journal* of September 27, 1900. It includes a careful *x*-ray examination of 140 cases of fracture of the lower end of the radius. It was found that these cases could be separated into ten or more distinct types according to the lines of cleavage and the direction of the displacements. All cases which were not strictly of the lower end of the radius were excluded.

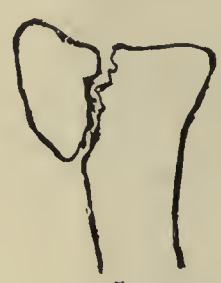


FIG. 1.

FIG. 2.

FIG. 3.

Class I.—Fracture through the base of the styloid process of the radius (Fig. 1). In this type the displacement does not affect the hand or wrist, which is still in normal relation with the main part of the radius. The fragment is displaced slightly upward and backward by the supinator longus. There is a slight backward displace-

ment and no silver-fork deformity. There is crepitus, no impaction, no subluxation of the ulna. In the whole number of cases there were four of this class, in one of which the styloid process of the ulna was broken.

Class II.—Fracture of the inner angle of the lower end of the radius (Fig. 2). The fragment usually remains in place or may be dislocated backward. The relative lengths of the styloids are not changed. Deformity is exceptional, crepitus is present, impaction is not. There is no subluxation of the ulna, unless the styloid is broken.

Class III.—Transverse fracture at or a little above the epiphysial line, without displacement (Fig. 3). This forms a numerous group. Impaction is sometimes, but not frequently, present. In this fracture the relation of the styloids is but little changed. There is no posterior deformity; crepitus may be obtained as a rule. Sixteen cases belong to this group. A considerable proportion of these cases had a fracture of the styloid of the ulna also.

FIG. 4.

FIG. 5.

Class IV.—Comminution of the distal fragment (Fig. 4). In this group the separated fragment is broken into several pieces. All of the classical signs of Colles's fracture are present. The fragments are generally displaced posteriorly readily, but part of them may go anteriorly. Thirteen, or nine per cent of the whole number, belonged in this group. In all there was fracture of the styloid process of the ulna.

Class V.—Separation of the epiphysis of the lower end of the radius (Fig. 5). These cases often present themselves with the fragment completely reduced, but may show a typical silver-fork deformity. As a rule reduction is easy, and the tendency to displacement is not great. Fractures of the styloid of the ulna occurred in all cases in which this process was ossified. In these cases careful reduction and fixation in splints or plaster for two weeks will always give a good result.

Class VI.—Separation of the epiphysis of the lower end of the radius, with a chip off the posterior surface of the diaphysis (Fig. 6*a* and 6*b*). This was quite a common group, it occurring in ten, or seven per cent, of the cases. Of the twenty-seven cases of separation of the epiphysis, ten, or over one-third of the whole number, were found to have a chip taken from the diaphysis.

FIG. 6*a*.

FIG. 6*b*.

FIG. 7.

Class VII.—Impaction of the lower fragment into the shaft (Fig. 7). These are very infrequent—only two cases in 140. In one the styloid of the ulna was broken; in the other the skiagram was too indistinct to determine whether it was broken or not. The relations of the styloid are altered, and there may be posterior deformity. There is impaction without crepitus. The ulna is subluxated when the styloid is injured. There is increase in width and slight radial displacement. In the treatment of this fracture it is better to separate the fragments and use anterior and posterior splints.

FIG. 8*a*.

FIG. 8*b*.

Class VIII.—Typical Colles's fracture (Fig. 8*a* and 8*b*). This class may be divided into two groups: first, that with marked radial displacement, and secondly, that in which the posterior deformity is more decided. All the classical signs are present, the amount of impaction and crepitus varying in individual cases. A lateral view

is shown in Fig. 8*a*, and an anteroposterior view in Fig. 8*b*. In the first the fragment, besides being pushed backward, is tilted on its own axis and pierced by the sharp dorsal edge of the diaphysis. In 8*b* the fragment is seen tipped to the radial side. This dislocation may occur with practically no dorsal dislocation, or *vice versa*. The sharp palmar edge of the upper fragment projects anteriorly. Where perfect reduction, which is rare, is not made, this lower edge is a menace to the tendon sheaths and median nerve. This is responsible for many of the contractures of the hand seen after this fracture. Forty-six per cent, or sixty-four cases out of the 140, were of this class.

Class IX.—Stellate fracture of the lower end of the radius, with longitudinal fissures extending into the shaft. In this class the relations of the styloid are but little changed, and there is but little deformity. No crepitus or impaction or subluxation of the ulna. There is more or less increase in width. In 140 cases this fracture occurred six times. In three the ulnar styloid was broken, and in two it was intact. In one this condition could not be made out. In this fracture a simple band about the wrist is all that is required.

Class X.—Colles's fracture; anterior displacement of the lower fragment. In this fracture a reversal of the dressings, as shown in Class VIII, is required to correct the anterior displacement of the lower fragment. This group included five cases, or four per cent of the whole number. In all of them the ulnar styloid was broken.

These ten groups do not include all of the possible forms that might be described, as the lines of cleavage vary somewhat in different cases and the various classes run into each other. We would especially call attention to the communication by Dr. Codman as throwing much valuable light upon the vexed question of Colles's fracture. The experimental studies that have been made have been comparatively limited, and have mainly dealt with fractures artificially produced on cadavers. The *x*-ray enables us to make a much more accurate study of these fractures during life, and this is the first extensive series of fractures of the lower end of the radius that have been studied in this way.

Spinal Cocaine Anesthesia.—

J. B. Murphy, in the *Chicago Clinic* for September, 1900, calls attention to the fact that cocaine injection in the subarachnoid space of the spinal canal was first administered by J. L. Corning,

but of late it has been exploited and its practicability demonstrated by Tuffier. The writer claims that in this new method of anesthesia we have one that is easy of application, and by it all tissues are rendered analgesic below the diaphragm. The sense of touch is not impaired, the reflexes are absent, and the consciousness of the patient is retained. Tuffier has had an extensive experience with the method and reports no untoward results. The article reproduces the communication of Tuffier which appeared in *La Semaine Médicale* of May 16, 1900.

FIG. 1.

The operative technique as described by Tuffier is as follows: The patient is in a sitting posture, both arms carried forward (Fig. 1). The fluid is thoroughly asepticized and the iliac crests located. An imaginary line connecting these two crests passes through the second lumbar vertebra (Fig. 2). The medullary canal is easily penetrated at this point. As soon as this is located the patient bends forward, which causes a separation of about 1.5 centimeters between the vertebræ. The needle is inserted to the right of the spinous processes about one centimeter from the middle line. The relation of the needle as it passes between the vertebræ into this space is shown in Fig. 3. The distance between the termination of the spinal cord and the bottom of the sacral canal, as well as the

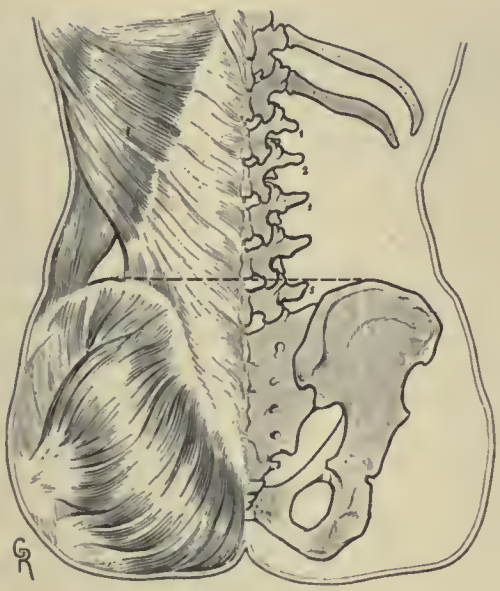


FIG. 2.

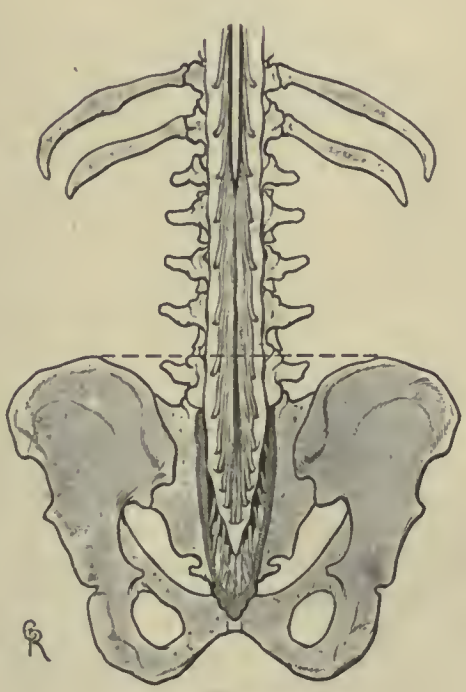


FIG. 3.

relation of the last lumbar vertebra to the nerves of the cauda equina, is shown in Fig. 4.

As soon as the needle enters the subarachnoid space, cerebro-spinal fluid escapes drop by drop, which is an indication that the needle is in proper position. The cocaine solution should not be injected until the spinal fluid is observed to flow out. About one cubic centimeter of a two-per-cent solution is injected slowly, the

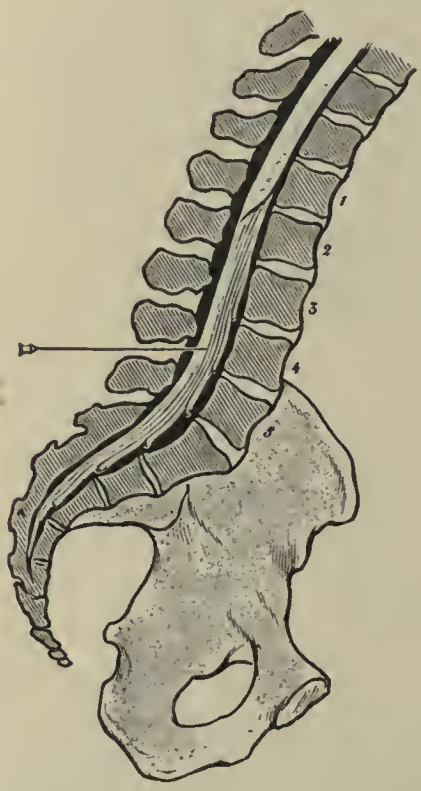


FIG. 4.

whole quantity being introduced in about one minute. The total quantity of cocaine should not exceed fifteen milligrammes. In from four to eight minutes the patients complain of a tingling sensation and numbness of the feet. At this time operation may begin. In from four to ten minutes after the injection, analgesia is usually complete. Most frequently it extends to the thorax, and occasionally as high as the axilla. The author has employed this method of anesthesia in nine cases: one was for an operation for a pyosalpinx,

two operations for varicose ulcers, one an amputation of an ulcerated and painful stump, one for tumor of the ovary, one for strangulated hernia, one for suppurative epididymitis, one for arthrectomy of the left knee-joint, and an appendectomy. In several of the cases there was nausea and vomiting, but in none were there untoward symptoms.

The Pathology and Diagnosis of Perforated Gastric Ulcer.—

C. E. Armstrong, in the *Montreal Medical Journal* for August, 1900, says that the surgical treatment of gastric ulcer is of comparatively recent growth. Gastric ulcer is very frequent, for a considerable percentage of the population suffer from it and the mortality is by no means insignificant. The extensive post-mortem records of Welch show that ulcer cicatrized or open was present in five per cent of persons dying from all causes. The first operation for perforated gastric ulcer was performed in 1890. Up to date the author is able to find for study and analysis 240 cases, with a very marked reduction in the death-rate of the period since the introduction of the operation in 1880. The early series of cases gave a mortality of 71.51 per cent to a mortality of about 40 per cent in the later cases. In the entire series of cases so far reported there is an immense difference in the mortality the earlier operation is done. Within twelve hours of the perforation, the mortality of the latest series was reduced to 19.23 per cent. The study of the perforation in the operative cases shows that the ulcer was in the anterior wall in 125 cases; in the posterior wall in thirty-two cases; near the lesser curvature in sixty-one cases; near the cardia in seventy-four cases; near the pylorus in forty cases. These figures of operative cases are in striking contrast to Welch's observations in the post-mortem room. Of 793 cases, 523 in nearly equal proportions were in the posterior wall and in the lesser curvature.

Nearly all patients with perforated gastric ulcer give a history of indigestion, gastric distress, or hematemesis, extending over a longer or shorter period. The first symptom to indicate the perforation is pain, and this symptom should always receive careful attention. Tenderness on pressure is the next symptom of importance. These two symptoms, if properly studied, will often give a fair indication of the location of a perforation. If the pain is found to be of maximum intensity in the gastric region, and is referred to the left costal border or through to a point in the back just behind the stomach, and if there is marked tenderness over this region, the suspicions of the physician should be thoroughly roused. If associated with this

symptom are an elevation of temperature and rapid pulse, the diagnosis of perforated stomach may be made with some certainty, especially if such symptoms be associated with a previous history of stomach derangement. The real difficulty is not one of refined diagnosis, but that such pain may be referred to colic and a dose of opium given with a consequent covering up of the symptoms, so that an accurate diagnosis cannot be made. The mortality from perforated gastric ulcer not treated surgically is 95 per cent. The chief cause of failure has been difficulty in identifying the perforation. Of the first seventy-eight cases reported, the perforation was not found in sixteen; of the last seventy-six cases, it was only overlooked in four. Hemorrhage has occasionally been the cause of death. Pneumonia and pleurisy have caused death in a few cases. The most frequent complications have been peritonitis and toxemia.

Schleich's Marble-dust Soap.—

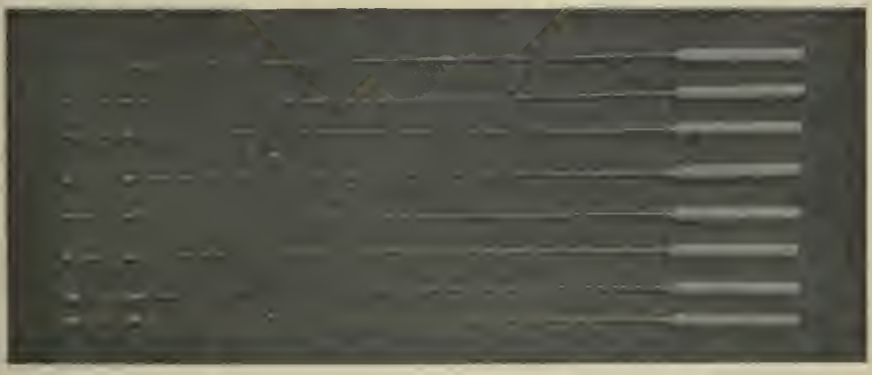
E. Fuchsig, in the *Wiener Klinische Wochenschrift* of August 30, 1900, says that the most important question in surgery is the sterilization of the hands and the field of operation. At present, the method which is most frequently employed is hot water, alcohol, and sublimate, though the latter is often shown experimentally to be quite insufficient, and more careful study of the organisms of the skin shows that it is neither the alcohol nor the sublimate that plays the most important part in this disinfection. This led to a want of confidence in chemical disinfection, and now the mechanical removal of bacteria is considered to be the most efficient. Brushes and soaps have largely taken the place of chemical disinfectants. Schleich has attempted to do away with the brush, alcohol, and sublimate by a preparation composed of marble dust, hard soap, an ammoniated stearin, and wax. The use of the wax was to render harmless the deeper organisms of the skin which could not be removed. Schleich claimed by this mixture to have attained complete sterility in 97 per cent. The writer has studied Schleich's method, using the same procedure. In the most of the cases where the end of the finger was simply brought in contact with the culture media, they remained sterile. When, however, the space under the nails and the root of the nail was scratched with a sterile piece of wood, in almost every case a growth was obtained.

The disinfection of the operating field is not practical with Schleich's soap, as it is exceedingly difficult to remove the particles of marble dust, especially in the parts that are covered with hair. Notwithstanding the fact that the absolute sterility of the nails and

folds of the skin is not secured by the new soap, the author strongly recommends it as being quite equal, if not superior, to other forms of hand disiufection. One thing that gives it especial value is the fact that eczema of the hands and follicular infection never follow the use of the soap.

Stricture of the Esophagus.—

F. E. Bunts, in the *Cleveland Medical Journal* for September, 1900, says he has treated seven cases of cicatricial stricture of the esophagus, each of which was caused by the accidental swallowing of lye. In all of the cases the stricture was very small, and the passage of even a filiforni bougie was accomplished with difficulty. He has found it impossible to get the esophageal bougies small enough to meet the indications in this class of stricture. He has, therefore, had made a series of double-bulbed, olive-shaped bougies (see accompanying illustration). - On each staff there are two bulbs,



the first being one size of the French scale smaller than the second bulb. This arrangement admits of the smaller bulb acting as a guide for the next larger size. With such instruments it is possible to dilate most cicatricial strictures, though the treatment is somewhat tedious. An increase in the size of the sounds used of one to two of the French scale often takes two or three days' treatment. At other times it is possible to increase the size of the sound one number of the French scale each day. Much depends upon the degree of stricture and the depth of the original injury. Great gentleness and care are required, and if one sitting is unsuccessful, it is better to permit the patient to rest for a day or two and then try again. Since employing these sounds the writer has not found

it necessary to use retrograde dilatation or gastrostomy in the treatment of cicatricial strictures. He has been successful in one case of stricture which had existed for seventeen years, in which the patient had been compelled to live on a liquid diet, and the stricture measured from four to six of the Freuch scale. By persistent dilatation he was able to stretch the stricture to a size sufficient to permit the swallowing of solid food when reasouably well masticated.

Indications for the Removal of Uterine Appendages.—

J. M. Lawrie, in the *British Gynecological Journal* for August, 1900, says that the precipitate surgery of twenty years ago, when the ovaries and tubes were extirpated on the slightest provocation, has given place to a reaction in favor of extreme conservatism. In the main this has been a healthy tendency, as such reaction was necessary to save the specialty from reproach. In some quarters the pendulum has swung too far in the opposite direction, and it has not yet settled down to small oscillations about its center of rest. The removal of appendages is indicated in non-suppurative salpingitis, chronic ovaritis, small cystic ovaries, pyosalpinx, suppurative ovarian cysts, uterine fibromyoma, and tubal pregnancy. He does not consider that neurosis is an indication for oophorectomy, as it is the practically unanimous experience of a large body of operators of former years that the operation is not only ineffectual, but positively harmful. Removal of the ovaries, apart from organic disease, is never indicated. Mere puncture and resection of the ovaries and tubes is in most cases ineffectual, and operations for pyosalpinx are usually preferably made by the abdominal route.

J. Bland Suttou, in the discussion, said that he had limited of late his removal of the tubes and ovaries to two sets of conditious—inflammatory lesions and tubal pregnancy. Under the inflammatory lesions, chronic salpingitis secondary to a septic endometritis. He likewise deprecated the removal of the ovaries for nervous disease, and also rejected it in cases of dysmenorrhea. He was surprised that the essayist advocated the removal of the ovaries in uterine fibroids, and he thought the indication entirely insufficient.

The Relation of the Ileocæcal Valve to Chronic Constipation.—

W. J. Mayo, in the *Annals of Surgery* for September, 1900, compares the circular muscular fiber which composes the ileocæcal valve to the pyloric constriction of the stomach. The purpose of this valve is to prevent the too rapid onward movement of the contents

of the small intestine before they are absorbed. That such an explanation of this function is correct is shown by the fact that in resection of this valve in eight cases the bowel movements became smaller and more frequent than they were before the operation. Constrictions of the ileocæcal valve led to pain and constipation. In one case of this sort in which a diagnosis of appendicitis was made, upon operation the appendix was found to be surrounded by adhesions, and an appendectomy was made. The patient returned to her home, but five months later reentered the hospital with the same symptoms of constipation and pain. It was noted at the first operation that there was some constriction at the ileocæcal valve with dilatation of the small intestine. The operation of pyloroplasty was resorted to with a relief of all the symptoms. A somewhat similar case, in which a diagnosis of chronic appendicitis was made, was found upon operation to present a similar constriction at the ileocæcal valve with dilatation of the small intestine. Pyloroplasty in this case gave relief to the symptoms, and there was a disappearance of the ileac pain, the tenderness, and constipation.

Morphine in Surgical Practice.—

Edward Martin, in the *Therapeutic Gazette* of September 15, 1900, says that morphine in surgical practice is a much neglected remedy. The prejudices against its use among surgeons is based upon the view that it masks symptoms, checks secretions, causes nausea and vomiting, and depresses the vital centers. While this to some extent is true, yet the value of the remedy is undeniable, as it relieves pain and simplifies anesthesia. The indications for the use of morphine in surgical practice are shock with pain and restlessness, in the nervousness which precedes operation in alcoholics, and in those in whom there is a previous history of anesthetics not having been well borne. After operation it is to be given in cases where there is pain and restlessness. It should always be given hypodermically, and the dose should be sufficient to accomplish the purpose for which it is employed. Morphine is a valuable hemostatic, and is especially indicated in those cases of hemorrhage which are accompanied by pain and restlessness. In neurotic patients the administration of a hypodermic of morphine makes anesthetization easy, safer, and favorably influences the after condition. In the first twenty-four hours after operation, when pain is so severe as to cause uncontrollable restlessness, it should be relieved by morphine. To this rule there are practically no exceptions.

THERAPEUTICS.

Treatment of Angina Pectoris.—

Theodor Schott, in *The Lancet* of September 8, 1900, says that treatment is to be directed to the anginal attack itself and the management of the heart in the intervals between the attacks. The paroxysms are most readily relieved by the nitrites; the nitroglycerin is, generally speaking, more efficient than the nitrite of amyl. He prefers the liquid form to the tabloids, on account of the more rapid effects and the more accurate dosage. Occasionally inhalations of the nitrite of amyl are successful in some cases in which nitroglycerin fails to relieve. He has had some experience with the tetranitrate erythrol, but it is not sufficiently extensive to justify the expression of a decided opinion. Friction of the pericardium is useful, together with the application of mustard leaves. The application of heat he has found to be the most useful, and for this he has devised a special india-rubber bag in which the temperature can be regulated and should be from 140° to 170° F. In cases where these simple measures fail, it may be necessary to resort to narcotics. The best of these is morphine. It is preferably given in a single dose subcutaneously. In using iodides, which are not only to be given during the attack, but also in the interval, the sodium salt should always be preferred, as those of potassium exercise an injurious effect upon the heart muscle. Digitalis in the interval of the attack is frequently disappointing. This applies to the uncomplicated forms caused by sclerosis of the coronary vessels, and to those which are combined with the aortic valvular lesions and aortitis.

In the cases of true angina pectoris the baths and gymnastic exercises, as practiced at Nauheim, have been most successful. In one case the attacks were so frequent that the patient resorted to as many as twenty tabloids of nitroglycerin in a day. A treatment of thirteen weeks caused all symptoms to disappear.

The Treatment of Malaria by Quinine.—

An interesting discussion was held in the Section of Tropical Diseases at the last meeting of the British Medical Association (*British Medical Journal*, Sept. 1, 1900). Andrew Duncan took the ground that the continuous administration of quinine in small doses was a prophylactic in those who were exposed to malarial infection. His conclusions were largely based upon the study of malarial infec-

tion as shown by certain Indian regiments, some of whom were given quinine regularly and others had none. R. Fieldings Ould entirely disagreed with this statement, saying that the prophylactic doses of quinine do not prevent malaria, but that this drug only attacks the malarial parasite at a certain stage in its development. Quinine alone kills the young parasite, and if the drug is given at other times it may damage the digestion, which it is very difficult to keep in order in tropical climates. In addition, quinine leads to a congestion and torpidity of the liver, and it is always those who exhibit hepatic symptoms who go down when invaded by the malarial parasite.

Patrick Manson said that the prophylactic administration could never be regarded as in any way immunizing the body, but it might prevent the development of malarial infection. It is probable that it may be employed as a prophylactic against the benign form, but it is less active against the malignant form. The value of the drug is apt to be narrowed in consequence of its being given in too routine a fashion and often under conditions in which it cannot be absorbed. The prophylactic value of quinine can only be settled with the aid of the microscope and in reference to the particular type of the malarial parasite.

Those contributing to the discussion were practically unanimous in the view that quinine is the best remedy in malaria, and the best time to give it is when the parasites are about to sporulate or are in their youngest phase as sporocytes. It is best given in a dose of about fifteen grains, although some still adhere to the plan of giving it in small doses repeated at frequent intervals. In cases of gastro-intestinal catarrh and other conditions, that do not admit of its ready absorption, the drug must be given hypodermically. Those in the discussion who spoke of its administration by the rectum, all pronounced this an exceedingly valuable method. Some cases of obstinate malaria that did not yield to quinine by the mouth were promptly cured by a single injection into the rectum, from twenty to thirty grains being thrown into the bowel.

Fat-free Tincture of Digitalis.—

E. G. Cutler, in the *Boston Medical and Surgical Journal* of September 20, 1900, speaks in the highest terms of the fat-free tincture of digitalis prepared by the method advised by G. W. England, of the Philadelphia Hospital. In this method the digitalis leaves, reduced to a No. 60 powder, are exhausted with purified petroleum benzine, either by maceration with a solvent in excess for forty-eight

hours, or by maceration and subsequent percolation. The application of the benzine to the leaves is repeated until all fat is removed. The residue is then dried by exposure to air until all the benzine has escaped. During and after evaporation the powdered leaves should be exposed to the sunlight as well as to the open air. After the benzine treatment a tincture is prepared from the powder by the addition of dilute alcohol according to the official directions, with this difference, that the percolate is carefully neutralized with ten-per-cent ammonia water. The newly made tincture is allowed to stand for twenty-four hours, when some coloring matter is precipitated, which is removed by filtration. The product as finally obtained is a dark reddish-brown liquid which will keep for years. It has no unpleasant odor and the taste is bitter. The purpose of the preparation is to remove the fat and all the nauseating noxious principles. The ammonia neutralizes the free acids. The addition of the ammonia also makes all the principles freely soluble in water, which facilitates absorption. The clinical results with the new tincture show that all that is claimed for it is borne out in its application, especially in the rapidity of absorption. The time in which the maximum effects are noted is only about one-half that required for the ordinary tincture. The writer has found it especially valuable in those cases of catarrhal gastritis in which both the infusion and ordinary tincture of digitalis disagree with the patient and cause vomiting.

The Treatment of Ataxic Patients by Coordination Exercises.—

James J. Putnam, in the *Boston Medical and Surgical Journal* of September 6, 1900, says that in the application of exercises for training the incoordination of ataxic patients it is skill and not strength that it is sought to develop. It is important that the muscles should be healthy, and to this end massage and exercises should be directed if necessary; but so far as the incoordination is concerned, it is necessary to teach the brain, and through it the lower reflex centers, to respond to the feeble and disjointed impulses that come from the skin and muscle.

The ordinary movements of the normal person are far too complex for the ataxic, and it is therefore necessary to begin with elementary motion, such as drawing the leg up and down in bed or moving the finger from one spot to another. However simple the movements, the patient should be called upon to perform each with promptness and accuracy at the word of command. Monotony and fatigue on the one hand and superficiality on the other are to be

avoided. To this end the exercises should be varied, and so far as possible should have an element of entertainment. The amusement, however, should always be secondary.

The leg coordinations should usually be performed at the command of an instructor; so many steps forward, backward, to the right, to the left, with the eyes open, with the eyes closed, stepping over objects, holding, balancing, and the like, all furnish ample opportunity for the exercise of skill and for the training of persistence, attention, and habit. There is a temptation to allow the patient to get on without an instructor, but the results are usually not satisfactory. This treatment is contraindicated in weak patients and in those who suffer from pains and crises. It is also not adapted to patients in whom the symptoms develop rapidly.

Massage in the Treatment of Recent Periarticular Fractures.—

G. Woolsey, in the *Annals of Surgery* for September, 1900, quotes Championnière's statements concerning the value of massage in the treatment of fractures with approval, but it is evident that he does not carry this method of treatment as far as is recommended by the French surgeon. He says that in certain fractures, especially those that involve both bones or one bone of a limb where it has but one retentive apparatus, it is necessary to prevent sliding or longitudinal displacement. Such cases are not suitable for massage until some consolidation has occurred, and this requires from ten days to three weeks. When one bone of an extremity is fractured and its fellow is intact to act as a splint, then massage may be begun within a few days of the receipt of the injury. The use of massage does not preclude the use of splints, but they may be used conjointly. In Pott's fracture, where there is much lateral displacement, immobilization in plaster for ten days is useful, before beginning massage and passive movements. Vigorous passive movements and massage should be used very carefully in those cases in which there is much tendency for deformity to recur; in these, better results will be obtained from primary immobilization. The fear in such cases is that the frequent recurrence of the deformity will lead to non-union, and it may ultimately be necessary to resort to some immobilizing apparatus, in which case union will be delayed and will not be as strong as if it were resorted to earlier in the case. In the treatment of Colles's fracture without any retentive apparatus, the results claimed by the writer for massage and passive movements are quite as good, so far as the deformity is concerned, as in those cases in which a retentive apparatus is employed.

Sarcoma of the Pharynx Treated by Injections of Formalin.—

John A. Thompson, in the *Laryngoscope* for September, 1900, reports the case of a patient 50 years of age who had a severe hemorrhage from the nose and mouth in August, 1898. Three months later a similar hemorrhage occurred. In spite of medical treatment, he bled to the point of exhaustion. The discharge from the nose was profuse, offensive, and purulent, as was also a discharge from the left ear. On examination, a solid growth was found in the nasopharynx. The blood was seen to ooze from this tumor. The patient's general condition in April, 1899, was very poor; he was weak from loss of blood and had chronic indigestion. The nasopharynx was filled with a red tumor, the surface of which was rough, and it was attached to the posterior wall. A portion of the growth was removed and examined microscopically, and proved to be a round-celled sarcoma. The general condition of the patient was so poor that an operation was not to be thought of. The substance of the growth was injected with one-half-per-cent solution of formalin, twenty-five minims of the solution being used each time. The injections were followed by some pain, which was of short duration. Nothing in addition was used except a cleansing and antiseptic spray. Six weeks after beginning the injections the tumor was less vascular, and a portion of it was removed by the postnasal forceps. The injections were continued and accompanied by a lessening of the vascular supply of the tumor. This permitted of removal of a portion of the growth without excessive hemorrhage. The patient, in all, was under treatment and observation about one year. About that time his condition was so far improved that he was able to return to work, and three months later there had been no recurrence of the growth.

An Exclusive Soup Diet and Rectal Irrigations in Typhoid Fever.—

A. Seibert, in the *Archives of Pediatrics* for September, 1900, has been so impressed with the importance of bacteria which have developed in milk as the cause of enteritis in children, that he has been asking himself the question as to whether a milk diet in typhoid fever does not add to the intestinal contents an excellent culture medium. More than ten years ago he began feeding his first case of typhoid fever upon a diet other than milk. In the beginning of typhoid fever he empties the bowels with a cathartic and gives nothing but plain cold water for the first twenty-four or forty-eight hours. Then soups are given: meat broths, containing oatmeal, barley, rice, and peas, strained and well spiced with salt and

pepper. After a few days lentil soup and the yolk of a fresh egg are added to the oatmeal, rice, and barley. Five meals in all are given during the day, but at night only fresh cold water. In cases which were not characterized by marked acidity of the stomach contents, hydrochloric acid was given before each meal. Every typhoid case is given from two to four plain water rectal enemata daily. For this purpose rectal tubes are not necessary, as a very slight elevation of the hips will allow of the colon being filled with water, thus thoroughly cleansing the lower bowel. The fountain syringe requires to be elevated about three feet above the patient, and only a short-tipped tube should be employed, which cannot possibly reach any ulceration that may exist in the lower bowel. He has treated 153 cases in this manner, with seven deaths. Three of these were brought to the hospital moribund, and four had complicating bilateral pneumonia.

Orthoform as a Local Anesthetic.—

F. B. Sprague, in the *American Therapist* for September, 1900, says that since he has begun the use of orthoform he has greatly diminished the quantity of morphine employed in his practice. He has practically given up the use of morphine in cases of pain from wounds, burns, incisions, and lacerations. In fourteen circumcisions he has not had the slightest pain from the time of operation to that of complete healing. The first anesthesia is produced by a three-per-cent solution of cocaine, and this local anesthetic effect is continued by the orthoform, which is simply dusted over the parts. It is combined with equal parts of boric acid and dermatol for their antiseptic and astringent properties. In carious teeth with exposed nerve endings, cotton dipped into a saturated solution of alcohol and orthoform, packed not too lightly into the cavity, will stop the toothache in from two to four minutes. Its anesthetic effect will last for several days if the packing is not removed. In hemorrhoids, added to various other ointments in a proportion of ten per cent, it relieves tenesmus and pain. In burns of the first degree, ten per cent of orthoform rubbed up with lanolin, to which five per cent of ichthyol has been added, is the best method of relieving pain, and is followed by rapid healing. In all minor operations under cocaine, the burning in the incisions which comes on from one to four hours after the operation is quickly relieved by dusting with orthoform. In specific urethritis, bougies containing two per cent of orthoform and ten per cent of iodoform and dermatol cause a rapid subsidence of the pain and a lessening of the discharge.

The Treatment of Gastric Ulcer.—

William Stuart-Low, in *The Lancet* of September 8, 1900, says that the treatment of gastric ulcer is at best disappointing. Of the theories which have been propounded upon which treatment is based, none have proven wholly satisfactory. He thinks he has found a solution of some of the difficulties in the use of an artificially prepared mucin. It is obtained in large quantities from ox bile and comes in the form of a dark-brown powder, tasteless and odorless and quite unobjectionable. The reason of the treatment is found in the symptoms of the patient, namely, a hyperacid secretion in which there is practically no mucus, a dry, coated tongue, dry stools, and constant constipation. These, he thinks, point to a deficiency of the normal secretion of the alimentary tube. Just before meals a cachet is given containing ten grains of bicarbonate of soda and ten grains of the dry powdered mucin. This is followed by immediate alleviation of all painful sensations in the gastric region. The mucin is found to be a practical laxative favoring regular action of the bowels. The mucin is a compound substance, composed of a carbohydrate and an "animal gum." All mucins are viscid and tenacious, and are precipitated by acetic acid and dissolved by alkalies. Ten grains each of mucin and bicarbonate of soda, mixed in a glass with a little water and gradually heated to the temperature of the body, readily changes into a sticky glue, and this change, taking place in the stomach, effectually protects the ulcer.

Disturbance of the Alimentary Tract After Hemiplegia.—

H. L. Winter, in the *Medical News* of September 15, 1900, says that the whole group of cerebral lesions, including epilepsy, embolism, and thrombosis, is followed by marked variations in temperature and disturbance of the alimentary tract. In hemiplegia upon the paralyzed side, the temperature is usually slightly subnormal at the outset, the thermometer frequently registering 97.5° or 98°. This is followed by a rise of temperature, the paralyzed side having one to one and one-half degrees higher temperature than the opposite. In cases where the temperature continues high, in which there is marked fluctuation, he believes that it is due to coincident disturbances in the alimentary tract. These are due to fermentations caused by the sluggish condition of the bowel and the consequent absorption of decomposition products. Small doses of calomel are most usually given in such cases, but it does not meet the requirements with any degree of constancy. In such cases he has given hydrogen dioxide administered in equal parts of glycerin. If both

the glycerin and the hydrogen dioxide are pure, they may be given in considerable quantity without causing any disturbance of the stomach. Drachm doses can be given, repeated every half-hour. Its exhibition is commonly followed by a prompt reduction in temperature and an improvement in the subjective condition of the patient.

Oxycamphor in Dyspnea.—

Ladislaus von Ketly, in *Die Therapie der Gegenwart* for August, 1900, says that this symptom remedy was first used by Ewald. The remedy was first described by Manasse in 1897. Since then it has been employed by Heintz, Ehrlich, Jacobson, Senator, and Neumayer. The writer has employed it in twenty-four cases of dyspnea. Twelve of these were due to heart disease, three to emphysema, five to kidney disease, and four to phthisis. In the emphysematous cases there were no results from the remedy. In all the other cases the dyspnea disappeared on the first or second day after the drug was employed. While the immediate results claimed by some writers were not noted, in the main the action of the remedy was most satisfactory. In bronchial asthma and angina pectoris it was of no value. The remedy has no unpleasant action upon the stomach, and does not cause constipation. Its action seems to depend upon the fact that it is a respiratory stimulant, the respirations being deeper and regular after its employment. It is usually exhibited according to the following formula:

Oxycamphor (50-per-cent)	10 parts.
Rectified spirits of wine	20 parts.
Simple syrup	10 parts.
Water	150 parts.

Poultices in Gonorrheal Arthritis.—

Albert Freudenberg, in *Die Therapie der Gegenwart* for August, 1900, says that for eight years he has treated gonorrheal arthritis with the best results by the application of hot poultices. Prior to the use of this method he had employed ice, pressure, salicylic acid, ointments, and other methods, but in most cases he was compelled to resort to opening and washing out the joint. His first experience with the poultices was in a severe gonorrheal inflammation of the knee-joint attended with great swelling and pain. He believed that an operation would be necessary, but as the patient declined interference of this kind, he applied a poultice. The immediate results were so favorable that from that time to the present he has used the method to the exclusion of all others, with results so satisfactory

that practically no operations have been necessary. To obtain the best results, poultices must be as hot as can be borne and changed frequently both by day and by night.

The Treatment of Chorea.—

W. v. Bechterew, in *Centralblatt für Nervenheilkunde und Psychiatrie* for August, 1900, speaks of the favor with which arsenic treatment of chorea has been received by English physicians, and of the enormous doses prescribed by Comby and others, in which increasing quantities are given daily until the maximum dose is reached. The success of arsenic he thinks is to be attributed to its power of overcoming reflex excitability of the nervous system. He does not question its value, but thinks that its use in efficient doses to control the disorderly movements necessitates a quantity that may cause severe poisoning. For this reason he employs a mixed treatment, using antipyrin and bromide of sodium in connection with the arsenic. Such an association of drugs he finds far superior to the use of the arsenic alone, and at the same time the latter drug does not have to be employed in doses which may cause arsenical paralysis.

The Preparation of Suprarenal Extract.—

G. T. Hankins, in the *Australasian Medical Gazette* of July 20, 1900, has prepared for intranasal work the suprarenal substance by dissolving tablets of the gland in water. In this way it is almost impossible to secure a clear solution even if centrifuging is used. He has found a very satisfactory solution can be prepared according to the following methods: One part of egg albumen is added to twenty parts of clear water. This is allowed to stand for a time, and the upper clear portion is drawn off. To it is added some formalin or carbolic acid to keep it from decomposing. To prepare the suprarenal extract, ten grains of the gland is rubbed down with 100 minims of albumen solution and brought to a boil. This mixture filters quickly, the filtrate being clear. To the filtrate, while still warm, ten grains of cocaine may be added, and the solution is ready for use.

Aspirin, a New Salicyl Derivative.—

Franz Tripold, in the *Wiener Klinische Rundschau* of September 9, 1900, says that this substance has all of the therapeutic value of many of the salicyl derivatives, with none of the unpleasant effects that accompany the administration of these salts. It comes in white

crystals which are soluble in water at 37°, to the extent of one per cent. It is easily dissolved in alcohol, ether, and chloroform. When added to acid solutions it does not change. It is due to this fact that the drug has no unpleasant effects upon the gastric mucous membrane. When aspirin reaches the intestine it is easily split into its component parts, and the salicylic acid is absorbed. He has given aspirin in fifteen-grain doses in neuralgic affections, especially those of the jaw. Usually in a half-hour the pain is lessened, and in an hour entirely disappears. In severe sciatica it has proved very efficient, being given in the same dose in connection with a saline cathartic. The pain returned at the end of twelve hours, but with lessened intensity. The aspirin is always best given upon an empty stomach and should be followed with some simple acid in several ounces of water. The latter maintains the integrity of the substance until it reaches the stomach.

Lavage of the Urethra by Solutions of Nitrate of Silver.—

Notwithstanding the number of new salts of silver, now and then we see a report upon the value of nitrate of silver in blennorrhagia. The latest is from Menahem Hodara (*Journal de Médecine*, Aug. 19, 1900). He says that the best results that have been reached by any method in his practice have been furnished by lavage of the urethra with solutions of nitrate of silver. These injections are given every day with a Janet irrigator, and the strength of the solutions is 1 to 4000. Both the anterior and posterior urethra are flushed. As the sensibility of the urethra diminishes, the strength of the solution is increased to 1 to 3000, and finally to 1 to 2000. At each séance at least one-half liter of the solution is employed. Such a treatment soon overcomes the specific character of the inflammation, the discharge becomes thin and watery, and a cure is reached in from two to four weeks, without vesical or other complications. In a number of cases of acute epididymitis he has used the same injection combined with local treatment. In all these cases the results were satisfactory. The solutions are always employed as hot as can be borne.

Alcohol as a Disinfectant.—

G. Fischer (*La Presse Médicale*, July 7, 1900) has studied the value of alcohol as a disinfectant and antiseptic. There is considerable divergence of opinion among experimenters as to its value. The writer finds that dilution of alcohol 55 to 100 has a very pronounced effect upon the staphylococcus. Such a solution was

slightly inferior to 1-to-1000 corrosive sublimate, and was quite equal to carbolic acid in 3 parts per 100. The effect of alcohol to which was added an alkali for the purpose of saponifying the fat greatly increased the disinfecting powers. The addition of sublimate or carbolic acid did not appreciably enhance its action. In the proportion of 80 parts in 100, alcohol is an exceedingly efficient disinfectant for the hands, occupying a position between carbolic acid and corrosive sublimate.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

When Shall the Lying-in Woman Sit Up?—

In the September, 1900, issue of *Progressive Medicine*, R. C. Norris abstracts an editorial from *Obstetrics* for June, 1899. It is such a telling argument against the rule of thumb method in obstetrics that we reproduce a portion of it:

"Just what influence is at the bottom of the rule-ridden system that directs us in most obstetrical customs it is hard to say, unless it is due to the general similarity of labor with its before and after accompaniments. No other branch of medicine seems to be guided by such arbitrary rules as obstetrics. When ergot-giving was in vogue, every patient, strong or weak, must receive the inevitable drachm. The binder had to embrace every abdomen, large or small; the vaginal douche scoured every vagina, clean or unclean; and even the dear doctor's visits must be regulated by the calendar rather than by the medical needs of the patient.

"The patient's escape from her puerperal bed has been under the chain of rule and regulation. The obstetrical statistician, and we are all statisticians, gathers from a thousand recorded confinements that the average time in bed was eight or nine days, and as most of the patients lived and had other babies, this length of time therefore was the best time.

"All of which is very absurd. If a doctor's judgment is so poor that he has to follow averages, he had better 'brush up!' Put a healthy, strong man in bed and keep him there for a month, and he will get up an invalid for the time being. It is just as bad to keep one woman in bed fourteen or twenty-one days as it is to let another up in from four to seven days. Many healthy, well-exercised women do not need to remain recumbent longer than from seven to nine days, while some can begin to get up on the fifth day without apparent harm. Patients whose muscles are soft and who

have been accustomed to lazy living will require from twelve to twenty-one days, even when there are no lesions of the uterus or perineum. Laceration along the genital tract places those so injured in a class by themselves; they cannot get up until their wounds have healed. A good working rule which always requires individual application is that a patient should begin to sit up whenever she can do so without such posture causing grave congestion in the genitalia. The change in posture sometimes causes an increase in appetite, and even acts as a stimulant to the uterine muscle. The erect posture should, of course, be assumed quite gradually, the patient sitting up only a few minutes at a time, lengthening the time according to the sense of comfort and absence of effect upon the lochial flow. Much assistance to uterine involution can be had by the use of sponge baths, ergot, strychnine, and massage."

Intussusception.—

W. J. Walsham, in the *Clinical Journal* of September 5, 1900, has a clinical lecture on this topic. Within the last few years he has seen six cases, of which four recovered after abdominal section. Five of his patients were young children, three years of age or under. Intussusception is a disease almost peculiar to infancy and early childhood; he has only observed two adult patients. Seventy-five per cent of the cases of this disease admitted to the Metropolitan Hospital were under one year of age, the youngest patient being only three days old.

Classic symptoms of intussusception are abdominal pain and vomiting, passage of blood-stained mucus, and the presence of a sausage-shaped tumor which may be felt through the abdominal wall or through the rectum. Not all of these symptoms are present, but abdominal pain is almost invariable. The pain of intussusception comes on suddenly and is intermittent. One moment the child is comfortable and the next is screaming with pain. Vomiting by itself is not of much significance, but where it is of sudden onset and accompanied with intermittent attacks of pain, it should lead to a careful inspection of the discharges and to a careful palpation of the abdomen. The passage of bloody mucus is quite characteristic, and out of sixty-eight cases that were carefully studied it was present in fifty-six.

Tumor is present in 83 per cent of the cases and is most frequent upon the left side. The abdomen, as a rule, is lax, differing in this respect from what it is in simple colic. If the gut is ruptured and peritonitis has been set up, the abdomen will be tense. Sometimes

the tumor is felt transversely. In some cases the tumor is beneath the ribs and cannot readily be detected; in these an anesthetic will often aid in clearing up the diagnosis.

In the treatment of these cases the writer is of the opinion that the abdomen should be opened at once. Inflation should never be used, as it is a dangerous method. It is impossible to properly estimate the amount of force to apply, and the colon may be easily ruptured. Injection is sometimes successful, but more often fails, and in the latter event valuable time is always wasted. Every hour that this condition exists causes an increase in the swelling and congestion, and the adhesions that have formed become firmer. In many cases after supposed reduction by injection the condition returns, but this is due to imperfect reduction. The tumor disappears under the hand, but the last inch of the incarcerated bowel is not reduced. Indeed this last inch of the invaginated bowel is difficult to reduce when the abdomen is opened and there is perfect freedom of manipulation. If injections are employed, the pressure should never exceed five feet of water, as a greater force than this may easily rupture the peritoneal coat of the colon. In giving injections the patient should always be chloroformed, and in children the force of the injection should never be greater than a height of three feet. Salt solution should be employed at a temperature of about 100°, and the fluid should be introduced slowly, at the same time carefully palpating the abdomen. The liquid should remain in the bowel ten minutes, and the temperature should not be varied. Not more than a quart of fluid should be used at one time.

The Rubber Balloon in Obstetrics.—

W. Rubeska, in *Obstetrics* for September, 1900, says that the rubber bag in his opinion is one of the most beneficent achievements in practical obstetrics. He has employed it for the induction and acceleration of abortion, the induction of premature labor, to replace the ruptured amniotic sac, to strengthen uterine contractions, and to hasten delivery in cases of danger to mother or child. He has employed Braun's colpeurynter, and also the inelastic variety of the bag of Champetier. He reports six cases of abortions in which the bag was employed. It was filled with from two hundred to four hundred cubic centimeters of sterile normal salt solution. By its use he found the cervical canal was more certainly and effectively enlarged than by the employment of the solid gauze tamponade.

The distended bag is the most certain and effective means of inducing premature labor, exceeding in ease of application and

certainty of action the popular method of Krause. In one case in which a bougie was introduced and left two days, it was not followed by contractions. Two days later two additional bougies were introduced without exciting pains. The following day a sterilized salt solution was injected between the uterus and the membranes. It was followed by nausea, cyanosis, and shallow respirations. These disappeared after a short time, and four hours later there were weak pains which ceased after eleven hours. A colpeurynter was then placed in the uterus and filled with sterilized salt solution. The following day the distended bag was expelled, leaving the cervix widely dilated, which was followed later by a spontaneous delivery. He has employed this method of inducing labor in forty-five cases. The longest period before delivery was eight days, the shortest five hours, and the average length of time before delivery was 36.5 hours. This could be further reduced if the inelastic bag was employed, with the addition of a traction weight. The prognosis for the child is no worse by this method than by others. An indication for the use of the bag is found in dry labor. The rubber balloon in these cases replaced the amniotic sac, the cervix was dilated without injury and in a comparatively short time. This method saves many difficult forceps operations, and it is rarely necessary to incise the cervix. In thirty-six cases of dry labor in which this method was employed, delivery was spontaneous in twenty-four, and in only twelve was artificial aid necessary. A number of cases of eclampsia are reported in which the balloon was introduced and materially aided in rapidly terminating the labor. It was also found useful in hemorrhage, acting as a tampon, facilitating dilatation of the cervix and a rapid delivery.

The Treatment of Postpartum Hemorrhage.—

J. W. Byers, in *The Lancet* of September 5, 1900, discusses the pathological causes, prophylaxis, and treatment of postpartum hemorrhage. He finds one of the most frequent causes of this condition is improper management of the third stage of labor. The two factors in this stage are the separation and the expulsion of the placenta. Nature should be allowed to separate the placenta, and then if it is not equal to its expulsion, the accoucheur may interfere. The great mistake is an attempt made at once by the obstetrician to express the placenta from the upper or contractile part of the uterus. After delivery, no attempt should be made to stimulate contractions, but the hand should be placed over the fundus of the uterus in such a way as to steady it and ascertain its condition. In from twenty to

thirty minutes the uterus will be noted to rise from the pelvis, and swelling is detected over the pubis due to a bulging forward of the lower uterine segment, and a few more inches of the cord is expelled. These signs show that separation of the placenta has taken place and has left the upper contractile portion of the uterus. If then pressure is made over the fundus during the height of the pain, the placenta is expelled. The most important of all prophylactic measures is to avoid delivery of the placenta in the absence of pains.

In case hemorrhage supervenes, the first thing necessary is external uterine massage. By this means the uterus is stimulated, and it is often sufficient in itself to arrest hemorrhage. Should this plan fail, a hot douche through a double-current catheter should be employed. The water should have a temperature of 118° F. and should be used in large quantities. The tube should be passed to the fundus, so that the entire inner surface of the uterine cavity is bathed with the hot solution. It is not necessary to add an antiseptic to the water, but salt, a teaspoonful to the pint, should be used. The introduction of the hand into the uterus is a very dangerous proceeding, and should not be done except in cases where it is necessary to mechanically separate the placenta or some of its parts. After the introduction of the hand the uterus should be carefully douched with a hot creolin solution. If these measures fail, bimanual compression may be employed, but it is very fatiguing to the accoucheur and trying to the patient. In such cases he prefers gauze plugging. The uterus should be drawn down by a vulsella forceps. Sterilized iodoform gauze is used for the packing, and is conveniently kept in sealed tins. Three or four lengths of five yards each, four inches in width, are commonly needed. If the uterus is properly drawn down less will be required in the packing. This depression of the uterus compresses the uterine arteries.

Measurements of Schoolchildren.—

W. S. Christopher, in the *Journal of the American Medical Association* of September 15, 1900, has an exhaustive article upon measurements of Chicago schoolchildren. He especially refers to backward children found in every large school system. Mentally they are unable to keep up in their class. Their presence in the classroom with normal children serves only to retard the latter without appreciably benefiting themselves. They are not sufficiently backward to warrant putting them in a State institution for the feebleminded. The close relationship between medical and educational work is shown in the management of the backward child, but the

same relation is shown in the education of normal children, though not to the same degree.

The author gives the results of a special study of twenty backward children. There were sixteen boys and four girls. The average age of the boys was 11 years, 5 months, and 10 days; that of the girls was 10 years, 4 months, and 21 days. A number of developmental defects were noted among these pupils, which would suggest imperfect formation of the brain. In two the heads were much below normal size; in seven the heads were markedly asymmetrical; eight had asymmetrical faces; six had peculiarly formed ears; and nine had narrow, high, or imperfectly formed palates. Five of the pupils had decided eye defects, the visual acuity being 20–30 or lower. In thirteen hearing was so defective in one or both ears as to place them at a disadvantage in school work. Malnutrition was shown by a marked anemia in two of the pupils, and a want of muscular tonicity was noted in seven. The amount of work done on the ergograph was lower than that performed by normal children.

Treatment of Noma.—

C. M. West, in the *Therapeutic Gazette* of September 15, 1900, says that the indications for medical treatment in this disease are imperative. It is commonly regarded as a hopeless condition, and this leads to half-hearted measures in its management. The diseased tissue must be thoroughly removed with a spoon, and all the septic thrombi cut away. The limit of healthy tissue is usually shown by free hemorrhage. After the curetting the actual cautery or fuming nitric acid should be applied. Active stimulants and restoratives should be given, such as camphor, strychnine, and quinine. The buccal cavity on the affected side should be kept packed with an antiseptic dressing. Breathing should be through the nose, as in this way the danger of septic pneumonia is lessened. The best local application is a cleansing agent, such as peroxide of hydrogen, and then the use of sterilized gauze saturated with a solution of

Oil of cassia	2 parts.
Oil of gaultheria	5 parts.
Hydrastis	30 parts.

The dressing should be changed frequently at first, and the attendants instructed to be on the lookout for an extension of the disease. All uneven teeth which press upon the mucous membrane of the cheek should be removed, as such excoriations may lead to reinfection, a relapse, and the death of the patient.

Tuberculosis in a Nursling Fifty-six Days Old.—

J. Comby, in the *Archives de Médecine des Enfants* for September, 1900, says tuberculosis is exceedingly rare in infants under three months old. In 118 autopsies of infants from birth to the age of three months he found but one case of tuberculosis. This is in striking contrast to the age period from three to six months, when 13 per cent were found to be tubercular, and in the second year the percentage had risen to 35 per cent. Cases which occur very soon after birth are supposed to furnish a strong argument in favor of the direct maternal transmission of the germ. This he regards as very rare, claiming that infection of an infant may take place very rapidly after it is born. The case of the infant which he describes was admitted to the hospital when one month old with intestinal symptoms of a subacute type. Thirty-six days later the child died without having developed temperature. The autopsy showed an ordinary gastroenteritis without structural alteration. The stomach was dilated and the kidneys contained a number of infarcts. The spleen contained a number of recent tubercles. The lungs were far advanced in tuberculosis, some parts presenting tubercles yellow in color, while others were caseous, with depots of granulation tissue. The lymphatics at the base of the lungs were involved in the tubercular process.

In discussing the probability of the placental transmission, the author comes to the conclusion that it is probable that the infant was infected by simple contagion, having been in close contact with a mother suffering from tuberculosis.

Temperature in Whooping-cough.—

Gregorio Araoz Alfaro (*Archives de Médecine des Enfants*, September, 1900) says that whooping-cough is regarded by the majority of writers and practitioners as a malady which pursues an apyretic course, particularly during the period of spasm. During the catarrhal stage a slight fever prevails, which ceases when the spasms occur. This view is supported by the leading systematic writers upon children's diseases, and Gassicourt says: "Whooping-cough is an apyretic malady except in the few first days during the catarrhal stage; when a fever exists, it is usually slight and of short duration." Fever elevation that is marked usually announces a pulmonary complication. Occasional communications to the literature of pediatrics during the last one hundred years describe epidemics of whooping-cough which were combined with temperature. Trousseau claimed that the catarrhal fever might last from seven

to fifteen days. The writer has observed a number of cases accompanied by fever. These he divides into three types: (*a*) Those in which the malady begins with a temperature that returns at irregular intervals, occasionally accompanied by chills—such cases are not marked by pulmonary complications; (*b*) a remittent type of fever which persists during the convulsive period without any exaggeration of the bronchial catarrh or other lung complication; (*c*) an intermittent type of fever which strikingly resembles malarial infection of quotidian type, sometimes tertian. In these cases the malarial parasite is never found.

Acetonuria During Pregnancy.—

I. Ronsse (*Annales de Gynécologie et d' Obstétrique*, March, 1900) has studied the question of the presence of acetone in the urine of pregnant women, those in labor, and following delivery. His material includes fifty-three cases observed during labor and for varying periods from one to fifty-five days after the accouchement. The results of inquiry are set forth in a table in which the amount of acetone is set down in the terms of habitual, augmented, abundant, or *nil*. It is recognized that a certain amount of acetone is present in all urine, which varies in different persons from day to day. Exceptionally, Lieben's method does not give a reaction for acetone, which is rare, and it is never a permanent condition. An increase in acetone lasts two or three days, and is often found in pregnancy without known cause. In a number of his cases just before labor he noticed a marked decrease in acetone. This occurred in a sufficient number of cases to indicate that there might be some relation between this diminution and the beginning of labor. During parturition, in the majority of cases, the amount of acetone is increased. In cases in which labor was prolonged and difficult, the acetone was augmented. This substance was also found in larger quantity during the first few days after labor, but it rarely lasted more than two or three days. The influence of lactation upon the amount of acetone seemed to be *nil*. Operations, fever, albuminuria, and eclamptic attacks did not seem to appreciably modify the elimination of this substance.

Solanum Carolinense in Trismus Nascentium.—

J. W. Marcy, in *Pediatrics* of September 15, 1900, describes the case of a nine-months-old baby who could not nurse. On examination the jaws were found to be quite closely locked, and all the voluntary muscles were in a state of tonic spasm. The body was quite rigid, so that it could be lifted from the bed by the heels.

The bowels were constipated, the urine nearly suppressed, and the abdomen retracted. The bowels were cleared by a dose of olive oil, and one drachm of solanum to an ounce of syrup and water, one teaspoonful to be given every three hours, prescribed. The drug was rapidly pushed until the patient was asleep, and he was kept in a drowsy condition for two weeks, care being taken that milk should be given at frequent intervals. The relaxation of the muscles occurred first in the jaws, then in the arms and hands; later the abdomen softened and the thighs relaxed. The rigidity began in the head and spread downward, and the relaxation followed the same course. Altogether the attack lasted between three and four weeks. Two other cases have been treated, but both resulted fatally, and in neither of them were directions carried out. In one case only was the remedy pushed to the point where the physiological effects of the drug were noted.

Uretero-intestinal Anastomosis.—

Reuben Peterson, in the *American Gynecological and Obstetrical Journal* for September, 1900, has a paper which includes an account of his experimental work upon the attachment of the ureters to the rectum, and the conversion of the latter viscus into a urinary receptacle. He unqualifiedly condemns the direct implantation of the severed ureter. The thirty-three reported cases gave most unfavorable results, as sooner or later there was ascending infection of the ureters which involved the kidneys. The results which have been reached in unilateral anastomosis are not to be compared with a bilateral operation. In the former case it is possible that a kidney may be entirely destroyed and the remaining healthy organ carry on the work without difficulty. The operation of transplanting the bladder wall which contains the urethral orifice, known as Maydl's operation, is one that may be undertaken with a considerable degree of safety. Of thirty-six cases so far reported, there were five deaths during operation. Nineteen of these cases are living and well at the end of one year, while of the thirty-three cases of uretero-intestinal implantation there was a mortality of 37 per cent. Of the six cases surviving, only one has lived longer than a year. Of the cases in which the base of the bladder was implanted, nineteen cases are living and well at the end of one year.

Honthin, an Intestinal Astringent.—

Josef Reichalt (*Wiener Klinische Wochenschrift*, Sept. 6, 1900) says that this substance is of especial value in the treatment of diseases of children. It is a light-brown, odorless, tasteless powder,

not hygroscopic. It is an albuminate of tannin, insoluble in warm or cold water, and only slightly soluble in alcohol or alkaline solutions. It is much less soluble in gastric juice than tannalbin, hence it is more valuable as an intestinal astringent. He has employed the remedy in seventy-six cases, but in those that were first treated it was given in too small doses. His cases included a number of intestinal inflammations, some of which were to be classed as follicular and others as membranous enteritis, some as chronic catarrh, and others occurred in the course of tuberculosis and rickets. The remedy is given in the form of powder upon the tongue, with milk or water. He has found Honthin a quick and safe intestinal astringent which may be given in considerable doses for a long time without producing unpleasant effects. From four to five grains may be given to very young children; to older ones, from four to seven grains as often as four or five times daily.

FORENSIC MEDICINE.

X-ray Injuries.—

The extraordinary behavior of some so-called *x*-ray burns gives them medicolegal importance. A. M. Winegar, in *Modern Medicine* for August, 1900, reports the case of a woman 46 years of age who had an *x*-ray examination of the hip made February 18, 1899, for a supposed sarcoma of the right hip. The time of exposure was fifteen minutes with the static machine. On the third day following the exposure the patient noticed a slight itching in the right groin, which increased each day. Later a few small vesicles appeared, and the skin looked dark. Two weeks later the patient was suffering intense pain with itching in the part. At this time there appeared a dark bluish-red spot about three-fourths of an inch in diameter on the lower part of the right side of the abdomen. A few days later the skin sloughed off, leaving a raw surface which enlarged until it had an irregular outline five or six inches in area. The surface appeared much like an ordinary burn with a dark border. There was intense pain in the wound with itching at the margin. All the applications that are used in ordinary burns were tried, but without giving the slightest relief. Alternate applications of heat and cold, three minutes for hot fomentations and one-half minute for an ice compress, gave more relief than any other remedy. The pain continued until the wound was entirely healed (May 24), a period of three months and five days from the date of the *x*-ray examination.

From May until August the patient was well. In the latter month a portion of the wound appeared red and a small scab formed, which came off, leaving a raw sore about one-half inch in diameter. This was on the upper part of the thigh just above Poupart's ligament. The ulceration was characterized by the same intense pain that had accompanied the first attack; both hot and cold applications gave some relief. A few weeks after the first slough appeared, a second one, somewhat similar, was noted an inch from it, and a few weeks later a third very small slough appeared. The wound was not entirely healed until February 1, 1900, nearly a year from the date of the exposure. Since that date the patient has been well.

Paraldehyde Poisoning.—

Lovell Drage (*The Lancet*, Sept. 22, 1900) reports a case of a woman 46 years old who had suffered from a chronic emphysema with heart disease. She had been addicted to the use of various drugs in excess. She had recently returned from abroad, and was put in charge of a special nurse in her own home. At that time two bottles of paraldehyde were in the house, and in the course of twenty-four hours she took five doses of five drachms each. Roughly speaking, from midnight to midnight of the same day, approximately ten drachms was used, and in the next nine hours three drachms. The symptoms noted were some degree of delirium and restlessness, and a constant craving for the drug. About two hours after the first dose had been given, the patient possessed herself of one of the bottles, and it is estimated that she took about two ounces. Soon after this it was noted that her condition was serious, and a practitioner was sent for, who found the patient unconscious, cyanosed, and covered with a profuse perspiration. The pulse was intermittent and the breathing shallow. Strychnine was administered hypodermically and was followed by some improvement in the patient's condition. Death took place three hours after the last dose.

As a safe dose of paraldehyde, the writer agrees with Binz that eighty-five drops is the maximum quantity for a single dose, and 170 drops the maximum quantity to be given in twenty-four hours.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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ORIGINAL ARTICLES.

REMARKS ON THE TREATMENT OF EXSTROPHY OF THE BLADDER, WITH REPORT OF A CASE OF VESICOSIGMOIDAL ANASTOMOSIS WITH THE FRANK COUPLER FOR EXSTROPHY.

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The literature relating to the treatment of exstrophy of the bladder, particularly that concerning the various methods of establishing communication between the ureters or bladder and the rectum, has within the last year been carefully reviewed by a number of writers, among whom may be mentioned Mazel,[1] Peterson,[2] Bovee,[3] and Frank.[4] In this paper only a brief *résumé* of the most important steps in the development of the treatment of this defect will be made.

The first attempt at treatment of exstrophy of the bladder was made by Mowat[5] in 1732. He by the use of pads and compresses endeavored to arrest the flow of urine from the ureters aud thus prevent the excoriation always associated with exstrophy. In writing of his effort at relieving this distressing condition, he says: "I have also closed the papilla two hours aud three-quarters with a small tent and astringent plaster over it. . . . Upon withdrawing the tent, the urine squirted a great way; . . . but by the uneasiness of the child and the anxiety of the mother, I am obliged to desist at the present time from further experiments."

No better success followed the method employed by Buxtorf[6] (1749), who after reducing the protruding posterior bladder wall, approximated the edges of the abdominal wall over the bladder and retained them in apposition by means of adhesive strips. This

method was also employed by Dupuytren,[7] Dubois and Lobstein,[8] who in addition endeavored to secure approximation of the pubic bones by bandaging the pelvis. Earl[9] (1828) tried by destruction of the mucous membrane of the exposed bladder wall by caustics to substitute scar tissue for the sensitive mucous membrane, and thus to render the life of the patient more endurable. Septic infection and death followed. By temporary occlusion of the ureteral orifices, Chassagnac[10] (1842) hoped to secure dilatation of the ureters, which would form reservoirs for the urine and act as a substitute for the urinary bladder. Alarming symptoms of retention caused this method to be abandoned.

The first attempt at closure of the defect in the abdominal wall by a plastic operation was made by Delpech[11] (1828). This operation consisted in taking a single flap of skin from the hypogastrium, and after freshening the edges of the bladder wall securing the flap in place by suture. Since the time of Delpech a great variety of plastic operations have been employed, each surgeon modifying the operative procedure of his predecessor. Among the most important of these plastic operations were those devised by Langenbeck,[12] Roux,[13] and Wood.[14] The latter employed three flaps; the first, secured from the epigastrium immediately above the defect, was turned directly down with the epithelial covered surface forming an anterior bladder wall. The external raw surface was then covered by two lateral flaps having their pedicles at Poupart's ligament. This method, which is by far the most rational of the plastic operations, has been employed by nearly all surgeons since Wood's time.

By lateral compression of the pelvis, continued for several months by means of an apparatus constructed for this purpose, Passavant[15] endeavored to secure approximation of the separated pubic arch. After this was accomplished the defect was closed by a plastic operation. Trendelenburg,[16] in order to facilitate the closure of the pubic defect, rendered the lateral walls of the pelvis mobile by separation of the sacroiliac synchondroses through an open incision. Three or four months after the first operation, the defect was closed by freshening the edges of the separated recti muscles and bringing them together by suture. An attempt was also made to construct a new urethra and to establish a sphincter for the newly formed bladder. In one case out of six operated upon by Trendelenburg, a satisfactory degree of continence resulted. Koenig[17] modified Trendelenburg's operation by substituting osteotomy of the anterior portion of the pelvic ring for diastasis of the sacroiliac joints. After trying the methods employed by Trendelen-

burg, Passavant, Koenig, and Kuster,[18] Mikulicz[19] has abandoned all attempts to remedy the defect in the pubic arch, and closes the abdominal defect by an operation performed in three steps, there being an interval of several weeks between each sitting. At the first operation he makes a new bladder by dissecting free from its attachment the posterior bladder wall. Care is taken to avoid injuring the ureters. The bladder is then folded upon itself, forming a hollow space, and the edges united by Lembert suture. Two lateral flaps are formed by incision running parallel to the margins of the defect and passing through the whole thickness of the recti muscles. These flaps are still further loosened by separation of the attachments of the recti from the pubic bones. The flaps are now approximated and sutured in the median line by silver wire. The lateral wounds are allowed to heal by granulation. While the wound is healing, the urine is conveyed from the bladder by means of a catheter. At the second operation a new urethra is constructed from what remains of the urethral mucous membrane and corpora cavernosa or labia. At the third operation the neck of the bladder is closed and a catheter inserted through the urethra into the bladder.

In all plastic operations for the relief of exstrophy, the final result is far from being good. In those cases in which the skin is employed in the construction of the bladder, the hair growing from the vesical side of the flap leads to the deposit of lime salts, which ultimately causes symptoms which necessitate repeated operations for their relief. In any case the bladder never becomes a functionating organ because of the lack of properly innervated tissue; consequently incontinence is the rule. It is also true that union of flaps is difficult because of the constant flow of urine interfering with the healing of the wound. In the Trendelenburg operation, and also in Koenig's modification of this method, septic infection of the wound occurs, and has been in not a few cases the cause of death. It may be said that up to the present time all of the operations so far designed to restore the anterior bladder wall have been unsatisfactory, and that the condition of the patient is but slightly improved by any of these procedures.

These failures to secure beneficial results by plastic operations led John Simon[20] (1851) to attempt to deflect the flow of urine from its usual course and direct it into the rectum. This was suggested by the condition found in certain animals where a cloaca persists throughout adult life. In man this state exists for a time in fetal life. To accomplish this end he devised an instrument

which was passed into the ureters and which contained two stylets that were forced from the ureter into the adjacent portion of the rectum. Through these openings sutures could be passed uniting the ureters to the bowel, and ultimately causing an opening to form too large to close by cicatrization. His first patient treated by this method succumbed to chronic peritouitis after a partially successful operation. This was the first ureterorectal anastomosis.

A few months after Simon's operation, Lloyd[10] attempted to establish a permanent communication between the bladder and rectum, expecting to close the abdominal defect later. He passed a seton by means of a trocar from the rectum through the bladder wall. The seton was removed on the seventh day. The patient died the same day of peritonitis. Holmes[22] (1862) slightly modified Simon's operation, employing pliable metal tubes to keep the openings from the ureters into the rectum patent. As soon as these were removed the fistulæ closed. The next year he imitated Lloyd's operation of establishing a vesicorectal fistula, using a screw clamp, one blade of which rested upon the bladder and the other passed into the rectum. By gradually approximating the blades a free communication was established between the bladder and rectum. After a free flow of urine into the rectum was assured the defect in the bladder was closed. Calcareous deposits in the new bladder quickly called for reopening of this viscus, whereupon the recto-vesical fistula speedily closed.

In a case in which the vesicovaginal septum had been completely destroyed by diphtheria, Rose[23] (1872) made an opening between the vagina and rectum two centimeters above the anus, and subsequently closed the vaginal orifice by suture of the labia majora. The patient afterward was able to retain the urine for three hours at a time.

Thiersch[24] (1881) established a vesicorectal fistula in a child having complete ectopia vesicæ associated with absence of vagina and uterus bicornis. This was accomplished by the application of a Sanson's enterotome, which caused a circumscribed necrosis of the bladder wall. The patient suffered no inconvenience from the presence of the urine in the rectum, and was able to retain the urine for three hours.

Because of the dangers associated with these methods of securing a communication between the bladder and the rectum, particularly that of opening the abdominal cavity or of including a loop of gut in the ligature or clamp, Pousson[25] proposed to accomplish the same result by cutting through the bladder and then uniting it to

the rectum by suture, and when union had taken place to open the rectum. Tuffier[26] operated in this way, and afterwards closed the defect in the bladder. A fistula persisted after the plastic operation, allowing the patient to retain the urine only about ten minutes.

Following the publication of the experimental work of Gluck[27] and Zeller on implantation of the ureters into the rectum and upon the skin after resection of the bladder, Sonnenburg,[28] in a case of exstrophy, extirpated the bladder and transplanted the ureters upon the dorsum of the penis. The defect in the abdominal wall was closed by suturing the freshened edges. Von Iterson,[29] adopting this idea, implanted the ureters in the labia majora in a case of exstrophy occurring in a female child.

The unfavorable results obtained in ureterorectal anastomoses in dogs, and the exceedingly high mortality in the cases where it had been employed in man, led Maydl[32] (1892) to adopt a new procedure for exstrophy, whereby he hoped by preserving the ureteral orifices intact to guard against ascending infection of the kidneys. His operation consists in transplanting the vesical trigonum with the ureteral orifices into the sigmoid flexure. In the two cases published by him in 1894, the result was all that could be desired. The presence of the urine in the large intestine seemed to cause no unfavorable symptoms. The patients could retain the urine from four to eight hours.

From the literature Peterson (1900) was able to collect thirty-six cases operated upon by this method, thirty-three of which were for exstrophy. Of these five died as result of the operation, and two later—one at four and the other at fifteen months, from infection of the kidneys. The final result in all was exceedingly good, the sphincteric control being poor in only one. The mortality, as shown by the cases recorded, considering the gravity of the operation, is surprisingly low. The long-continued anesthesia, the great shock, and the danger of peritoneal infection, all combine to make the immediate risk to life very great. The mortality is probably much higher than is indicated by the cases reported. As to the remote risks to life, there is undoubtedly great danger of infection of the kidneys even after the lapse of a year or more. In some cases the kidneys may be able to withstand the infection as Peterson suggests, or death may in the end result from interstitial nephritis caused by a degree of infection not sufficiently intense to cause pyelitis or pyelonephrosis.

Having in mind the advantage of preserving as nearly as possible the natural mode of termination of the ureters in the bladder,

other methods of implanting them into the gut have been devised where, by oblique insertion or by means of a valve-like opening, this end may be attained. Of these operations, four have been advocated. Krynski,[31] by turning back a seromuscular flap, implants the ureters into a space in the submucous connective tissue of the rectum. The urine is allowed to escape through a small opening in the mucous membrane. Vignoni[32] places the ends of the ureters upon a V-shaped flap taken from the anterior wall of the gut. The ureters are then covered by suturing over them two lateral folds of the gut wall. Pisani[33] transplanted the vesical trigonum together with the ureteral orifices upon the posterior rectal wall through an incision in the anterior wall. The value of these valves in preventing infection has been demonstrated by experiments on animals to be practically *nil.* The valve soon disappears, leaving nothing to prevent infection of the ureter. In cases of oblique insertion, or where the ureteral end is allowed to hang free in the intestine, there is great risk of obstruction of the ureter.

In 1898 Fowler[34] reported a successful case operated upon by him by a new method of oblique implantation of the ureters into the rectum. He describes the operation as follows: "The abdomen is open with the patient in the Trendelenburg position; the ureters are cut obliquely close to the bladder. A longitudinal incision through the serous and muscular coats of the anterior rectal wall, seven centimeters in length, is made. The serous and muscular coats are now separated laterally until a diamond-shaped portion of the mucous membrane is exposed. A tongue-shaped flap, with its base directed upward, is cut from the mucous membrane, doubled upon itself, and sutured in such a way that one-half of its mucous surface presents anteriorly. A flap valve is thus secured, both sides of which are covered by mucous membrane. The ureters are now placed in the incision so that their oblique cut ends lie upon the presenting mucous surface of the flap, where they are held in place by one or two catgut sutures. The valve and attached ends of the ureters are now pushed into the cavity of the rectum. The rectal wound is closed by first suturing the mucous membrane with catgut and the serous and muscular coats with silk."

The patient, a boy aged six years, was well when the report was made, fourteen months after the operation. The urine could be retained for six hours.

After a series of experiments, in which the bladder was anastomosed to the rectum by means of his decalcified bone coupler, Frank found that the operation could be performed without infection of the

kidney, and recommended it as a possible means of treating exstrophy. The advantages claimed for this method by Frank are: (1) Simplicity and brevity of operation; (2) absence of danger of ureteral constriction or of sloughing of the implanted trigone, as in Maydl's operation; (3) comparatively little danger of infection.

Having a case of exstrophy under observation at the time when Frank made his preliminary report of his experiments, I decided to adopt his suggestion, and accordingly, on January 9, 1900, performed a vesicosigmoidal anastomosis, employing a decalcified bone coupler. Although death from shock followed, nevertheless I consider the operation practicable and believe that it is deserving of further trial. The case was as follows: The patient was a male child, five years of age, fairly well nourished, but slightly undersized. On examination of the hypogastric and genital region, the following could be seen: There was a complete absence of the lower portion of the anterior abdominal wall. For it we found substituted a mucous surface of about six centimeters in diameter and reaching from the pubis to the umbilicus. Above, this mucous surface gradually shaded off into scar tissue, and this again into normal skin; laterally it was continuous with the skin over the anterolateral abdominal wall. On this mucous surface, just above the pubis, and separated by a distance of about two centimeters, were two small elevations about the size of a pin-head surmounting a small depression, into which could be passed a filiform bougie. From these openings urine escaped at intervals of a few seconds. On examining the external genitals, we found a rudimentary penis with a complete absence of the corpora cavernosa, the urethra being represented by a shallow groove upon the dorsal surface of a very defective corpus spongiosum. The scrotum seemed normally developed. The testicles were undescended and could be felt in the inguinal canals. On the right side there was a large inguinal hernia, which, when the child cried, descended into the scrotum. With the child in the erect position, or when crying, the mucous surface just described was forced forward, forming a semispherical tumor about the size of a large orange. The entire mucous membrane covering this tumor, as well as the skin of the external genitals and that covering the inner sides of the thighs, was excoriated and exquisitely sensitive from the constant flow of urine.

Operation.—Under chloroform anesthesia, with the patient in the Trendelenburg position, a curved incision was made circumscribing the upper margin of the defect, extending downward on each side toward the horizontal rami of the ossa pubes, to a point about oppo-

site the ureteral openings. This incision outlined a flap consisting of the posterior bladder wall, being convex above and having its base on a line with the ureteral orifices (Fig. 2). On turning forward this flap, the sigmoid flexure of the colon was easily identified and drawn forward into the wound. At a point just below where the coupler was to be inserted, a posterior serous surface of the flap was united to the sigmoid by two sero-serous sutures of fine catgut. The bladder wall was now incised for a distance of about one and three-fourths centimeters, longitudinally, the incision being placed at a point about midway between the ureteral orifices and extending a short distance above a line drawn between these two points. After the introduction of a purse-string suture around this incision, a similar one was made at a corresponding point in the sigmoid flexure, the gut first being emptied and two Murphy intestinal clamps applied above and below. The coupler was now introduced and the purse-string tied (Fig. 3). A new bladder, in the cavity of which was the coupler, was now constructed by suturing from above downward the flap consisting of the posterior bladder wall, and by utilizing the mucous membrane covering the upper part of the rudimentary penis and that corresponding to the defect in the pubic arch for a second flap, which was turned upward and united to the first by a series of interrupted Lembert sutures (Figs. 2 and 3). The edges of the abdominal defect were then freshened and the recti muscles brought together by interrupted sutures of silkworm-gut, so that only a small portion of the anterior surface of the new bladder remained uncovered. The lower part of the defect remaining unclosed was loosely packed with iodoform gauze. The sphincter ani was stretched so as to allow the free escape of urine, and the wound dressed in the usual manner, the abdomen first being supported by strips of adhesive plaster.

The time required to complete the operation was nearly two hours. The child was suffering from profound shock when taken from the table, but rallied somewhat during the night. Urine was voided through the rectum, at intervals of about two hours. There was apparently no escape of urine through the line of suture in the bladder. Death occurred sixteen hours after the operation. The post-mortem examination of the abdominal organs, made by Professor Fütterer at the Northwestern University Medical School, showed that there was not the slightest evidence of peritonitis, nor was there any leakage from the new bladder. There was firm agglutination of the serous surfaces held together by the coupler. Death undoubtedly resulted from shock due to the prolonged operation. This can be avoided in future operations.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

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103 STATE STREET.

A CASE OF CIRRHOSIS OF THE LIVER AND OF THE PANCREAS, WITH DIABETES AND HEMACHROMATOSIS.[1]

BY A. P. CONDON, M.D., CHICAGO.

The patient, a man, white, aged 42 years, was brought into the Cook County Hospital by the police May 25, 1899, in a semicomatose condition. He gave a history for one year previous of the symptoms of diabetes, such as thirst, polyphagia, glycosuria, and pruritus, but the exact details were not obtainable. He died in coma the following day. He had no friends or relatives, consequently his past history could not be obtained.

The post-mortem examination twenty-four hours after death revealed the following: The body is that of a fairly well nourished man. The extremities are somewhat emaciated and the chest is decidedly barrel-shaped. Post-mortem rigidity is well marked. The integument covering the whole body is of a yellowish-brown color.

In the peritoneal cavity there are adhesions between the right lobe of the liver and the anterior abdominal wall. The left lobe of the liver is free. The parietal peritoneum and the serous surface of the intestines show a uniform yellowish-brown pigmentation. The intestines are free from adhesions, except the tip of the appendix, which is embedded in a mass of adhesions behind the cæcum between this and the abdominal wall. The diaphragm reaches to the fourth intercostal space on the right side, and to the upper border of the fifth rib on the left side.

The lungs overlap each other in the median line. The left pleural cavity is empty; the right pleural cavity is obliterated by easily broken-down adhesions. The lungs float and crepitate. The upper lobes are lighter in color and contain a small amount of coal pigment. The lower lobes are of a dark-red color, a frothy fluid exuding upon pressure. The right interlobar fissure is obliterated by adhesions similar to the adhesions in the right pleural cavity.

The layers of the pericardium are adherent, and the cavity contains a small quantity of slightly cloudy fluid. The parietal pericardium is covered with a network of small vessels engorged with blood. The heart weighs 285 grammes, is softer than normal, and is of a pale-brown color. The aortic and pulmonary valves are competent. The anterior cusp of the mitral valve is thickened at its base. The foramen ovale is open.

[1] Read before the Chicago Pathological Society, April, 1900.

The liver weighs 2700 grammes. The surface is of a mottled brownish-yellow color and uneven, due to small nodular elevations. The capsule is much thickened and the consistence is increased. Upon section the same mottled appearance is evident. There is a decided increase in the fibrous stroma and the lobules appear distinct, being lighter than the stroma around them. The gall-bladder extends beyond the liver; it is distended by a thick, dark bile.

The spleen is enlarged, measuring 13 by 8½ by 3½ centimeters. The capsule is thickened, and upon the diaphragmatic surface are whitish nodules. Upon section, the spleen is grayish in color, and the connective-tissue trabeculæ are relatively increased.

The stomach contains a large amount of bile-stained mucus. The mucous membrane of the intestines appears normal.

The pancreas is larger than normal and cuts with increased resistance. The cut surface shows brownish-yellow pigmentation, and a marked increase in the fibrous stroma.

The capsule of the kidneys strips easily; upon section, there is an increased amount of blood, the color is dark-red, the cortical markings are distinct, and the glomeruli are plainly visible.

Bacteriological Examination.—The cultures from the lung gave the bacillus coli communis and the pneumococcus; from the heart's blood, the staphylococcus pyogenes albus; from the pericardial cavity, the pneumococcus; from the liver, the kidney, and the spleen, the bacillus coli communis was obtained. The tubes inoculated from the pancreas were sterile.

Histological Examination (after formalin-alcohol fixation).—Lungs: A number of the acini are filled with a homogeneous material, which stains pinkish and contains no cells. Some of the acini which are not filled with this fluid are seen to be widely dilated, and some of them are ruptured. The vessels are distended with blood and a heavy deposit of black pigment surrounds them; along the alveolar septa the pigment is deposited in irregular masses. By treating sections with a two-per-cent aqueous solution of ferrocyanide of potassium, and a one-half of one-per-cent solution of hydrochloric acid in glycerin, this pigment remains unchanged, excepting in a few places along the septa, where it alters to a bluish-green color—the characteristic reaction of iron.

Heart: A well marked segmentation of the heart muscle, with no diastasis and a slight increase in the connective tissue, is noted. A uniform and general deposition of yellowish pigment, which appears as small granules in the myocardial cells. The pigment resembles that of brown atrophy, but gives the microchemical reac-

tion of iron. In certain areas of the specimen some of the nuclei of the myocardial cells are greatly enlarged.

Spleen: The capsule is thickened, with a decided increase in the connective tissue of the organ. The pulp is engorged with blood. There is a small amount of pigment, mostly in the Malpighian corpuscles, and most of the pigment gives the iron reaction, but a little of it shows no change.

Liver: The capsule is greatly thickened; in the substance of the capsule are areas of extensive round-celled infiltration and embryonal blood-vessels at the outer edge of the capsule, throughout which are brownish-yellow deposits of pigment. Extending from capsule into the parenchyma are heavy bands of connective tissue. These bands encroach upon the liver lobules, in many cases separating them into single lobules or into groups of two or three lobules. This interlobular connective tissue is so increased that in many places the lobules contain but eight or ten hepatic cells. In this hyperplastic tissue are numerous newly formed bile-ducts and some embryonal blood-vessels. Throughout the sections, in the interlobular tissue, are numerous areas of leucocytic infiltration. There is quite a marked degree of fatty infiltration, mostly in the periphery of the lobules. There is also seen in the parenchyma a few areas of necrosis, in which the cells are broken up and stain as débris. Throughout the section is a deep brownish-yellow, granular pigmentation. This pigment is deposited in the hepatic cells in the form of regular finely granular masses, which vary in size from one-half to three times the size of a hepatic cell. In many of the cells the nuclei are obscured by this deposit. In the interlobular connective tissue the pigment appears in heavy irregular masses. It is also deposited in the walls of the blood-vessels and bile-ducts. All of the pigment gives the microchemical reaction of iron.

Kidney: There is a slight increase in the connective tissue; the glomeruli are shrunken and displaced; the cells lining the convoluted tubules appear slightly granular, and the nuclei stain faintly, showing beginning degeneration. The capillaries are distended with blood. The cortical portion contains pigment deposited at intervals in the cells of the convoluted tubules. All of the pigment gives the iron reaction.

Pancreas: The connective tissue is increased throughout the specimen; heavy deposits of pigment are seen; it is observed in the pancreatic cells, but heavier deposits are seen in the connective tissue; all this pigment gives the reaction for iron. There is some round-celled infiltration in the connective tissue. There is a moder-

ate amount of fat throughout the specimen, mostly in the connective tissue.

Bronzed diabetes is a disease characterized by the symptoms of diabetes mellitus to which has been added a general pigmentation, hypertrophic cirrhosis of the liver and usually of the pancreas. Bronzing of the skin is usually present, but not in all of the cases. All of the internal organs are more or less pigmented, the liver containing the largest quantity, then pancreas, heart, spleen, kidney, and lungs, the last containing the smallest amount. This pigment gives largely the iron reaction.

In 1871 Troisier observed a case of diabetes in which there was bronzing of the skin; but it was not until 1882 when Hanot and Chauffard in their report of two cases minutely described the disease, both the clinical symptoms and the anatomical findings. Up to the present time there are something like twenty-five recorded cases. All of these have occurred in men and in late adult life. Seventeen of the twenty-five have occurred in France. The disease is unknown in this country, except for one clinical case reported by Berg, in which he bases his diagnosis on the following: "A woman aged 45 had suffered for several years from exophthalmic goitre and the subjective symptoms of diabetes; when she came under observation she had all the symptoms of a severe sugar diabetes, a bronze discoloration of the skin, a slight hypertrophic cirrhosis of the liver, and ascites." The case is rare, being complicated with Basedow's disease and occurring in a woman.

In 1889 Von Recklinghausen reported a number of cases of general pigmentation without diabetic symptoms, and named the condition hemachromatosis. In this country Opie and Adami each reported a case, and Osler gives a clinical report of two cases. Writers upon the disease disagree as to its etiology and pathology.

Regarding the etiology of bronze diabetes three theories may be mentioned: (1) That bronzed diabetes is a distinct pathological entity — advanced by Marie and supported by Hanot and other French writers; (2) that it is a diabetes mellitus, the diabetic poisons producing the hemachromatosis, cirrhosis of the liver, pancreas, etc. — advanced by Letulle; (3) that hemachromatosis is the primary affection, and the deposition of pigment causes the hypertrophic cirrhosis of the liver and pancreas, diabetes resulting when the pancreatitis reaches a certain stage—advanced by Opie.

All authorities agree that the pigment which is deposited throughout the different organs and tissues is largely an iron-containing pigment, but the manner in which this is deposited is still a matter of conjecture.

Hanot, Chauffard, and Schochman maintain that the changes in the blood are due to the diabetic poisons, causing an abnormal condition of the hepatic cells, whereby the cell metabolism is altered and a deposition of pigment within the cells takes place. The excess is reabsorbed by the blood-vessels and lymphatics and deposited in different localities throughout the body in the form of minute emboli.

Letulle, Rendu, De Massory, and Hayem believe that pigment is formed in the cell from the hemoglobin of the blood. Hermandez thinks that a dissolution of the blood takes place, and the pigment is deposited in different parts of the body.

Destruction of corpuscles in pernicious anemia, malaria, etc., gives rise to deposit of pigment, but it differs from the pigment formed in hemachromatosis. Welch suggests that the pigment formed in hemachromatosis may be due to a specific form of destruction of the red blood-corpuscles.

Adami found in a very large proportion of the pigment of hemachromatosis distinct diplococci, and comes to the conclusion that the pigment is of bacterial origin, but this has not yet been confirmed by other workers.

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A CASE OF MALARIAL CYSTITIS.

BY WM. F. BENART, M.D., Hot Springs, Ark.

The undoubted malarial origin of this case tempts me to report it as fully as possible. The rarity of such cases did not lead to the suspicion of malaria, so the case was first treated as an ordinary attack of cystitis due to bacterial infection, after an examination had been made for stone and tuberculosis with negative results. A history of the case is self-explanatory.

J. D. McM——, aged 45, by occupation a nurse, about the middle of May, 1900, had a mild attack of influenza lasting a few days, after which he returned to work, but did not feel entirely well. June 5, after having done duty in the kitchen for several days, he noticed an uneasiness and frequent desire to urinate, which gradually increased in severity, so that within five days he was unable to do his work during the latter half of the day. About the noon hour of every day a slightly painful sensation and uneasiness confined to the hypogastric region came on and gradually increased in intensity, causing marked vesical tenesmus and frequent and painful urination. The attack reached its maximum between 3 and 6 P.M., lasting from one to three hours, when it would gradually cease. During these attacks he passed urine often, in small quantities, laden with pus. Vesical tenesmus was very severe, and he complained of a burning in the urethra toward the end of urination, evidently due to spasm of the sphincter muscles and irritation of the prostate gland. Outside of the premonitory symptoms above mentioned, and excepting the periodicity of the attacks, there were no symptoms pointing to malaria. There were no chills or even semblance of same before or at the beginning of his attacks, and the rise of temperature which occurred during these periods never exceeded four-fifths of a degree; but he was troubled with sleeplessness, poor appetite, a tired and worn-out feeling, and a gradual loss of weight.

As soon as the vesical symptoms became noticeable, he was placed upon urinary antiseptics internally, and irrigation with boric acid solution; but the symptoms increased in severity, excepting that after vesical irrigation he had moderate relief for about one hour. The pus was thoroughly examined for gonococci and the tubercle bacillus, with negative results. Numerous examinations of the urine voided during these attacks gave the same result. The urine varied in specific gravity from 1.012 to 1.025, was of acid reaction, with slight amount of albumin due to disintegration of the

pus cells, and a large amount of pus mixed with bladder and prostatic epithelia. No blood or hemoglobin.

The list of drugs beneficial to cystitis was thoroughly dissected and the most suitable were given a thorough trial, but no improvement was obtained. The periodicity of the attacks with the moderate subjective symptoms between them—and from a statement he casually made that on certain days, which upon questioning proved to be every other day, the symptoms were more severe and lasted a trifle longer—led to the suspicion that it might be of malarial origin. Between the attacks he had no symptoms which would indicate that he had cystitis, with the exception of a small amount of pus passed with the urine. He was placed on quinine sulphate divided as follows: 7 A.M., 9 grains; 12 M., 9 grains; 3 P.M., 3 grains. The second day the symptoms began to subside, and by the fifth day had nearly disappeared. The quinine was now stopped, and within three days he had a recurrence, but in a milder form. An examination of the urine at this time showed a decidedly diminished quantity of pus and epithelium. The administration of the same doses of quinine was again commenced July 7. Until July 11 there was a gradual decrease in symptoms.

July 13. Had a very slight attack, hardly noticeable. Urine showed pus and epithelium in very small amount.

July 14. Attack was more severe and lasted longer than on day before. Urine showed increased amount of pus compared with July 13.

July 15. No attack.

July 16. Recurrence of trouble, but of lesser degree than on July 14.

July 17. No attack.

July 18. Attack of lesser degree than on July 16.

July 19. No attack.

July 20. Attack less in intensity than on July 18.

July 21. Had no attack.

July 22. Very mild attack, hardly noticeable. Urine showed but very few pus cells.

July 23. No attack. Complained of ringing in the ears and headache.

July 24 and 25. No attack.

July 26. Complained of slight uneasiness during afternoon and was compelled to pass his urine a little more frequently. Urine contained small amount of pus. Was placed upon the original doses of quinine.

July 27 to 30. Had no recurrence or symptoms of his trouble.

July 31 and August 1. Had not noticed the slightest symptom of his trouble during the last six days. Appetite is improving, sleeps better, and is gaining in weight.

August 2. Had slight attack. Urine showed very few pus and epithelial cells.

August 3. No attack.

August 4. Complained of slight uneasiness.

August 5 to 15. Had no attack. General condition is improving rapidly; has a good appetite and sleeps well through the whole night.

The peculiarity of the exageration of his symptoms every other day during his acute attacks, and the same phenomena during his recovery, showed the infection to be of the double tertian variety, with paroxysms every day, but on alternate days of varying intensity. A specimen of the blood obtained after the administration of the quinine was stopped for the first time, and taken about 10 A.M., showed the presence of the parasite of malaria, verifying positively the existence of such an infection.

218 CENTRAL AVENUE.

EXAMINATION OF THE STOMACH CONTENTS WITH RESPECT TO HYDROCHLORIC ACID.[1]

BY FREDERICK A. McGREW, A.B., M.D., DAVIS, ILL.

IV. QUALITATIVE AND QUANTITATIVE ANALYSIS OF THE NORMAL STOMACH ACID.

Free *HCl* present.....by dimethyl-amido-azo-benzol.....by phloroglucin vanillin.....by resorcin.....

Free HCl (.....method).....(°).....grms. .....per cent. .....parts per 1000.

Combined HCl (.....method).....(°) .....grms. .....per cent. .....parts per 1000.

Free and Combined HCl.....(°).....grms.....per cent. .....parts per 1000.

Total Acidity (.....method).....(°).....grms. .....per cent. .....parts per 1000.

Apparatus required: Mohr's burette, 25 or 50 cubic centimeters, with glass stopper; burette holder, which may be improvised; evaporating dish, German porcelain glazed inside, capacity 3 ounces; beaker, Bohemian glass, capacity 3 ounces; glass graduate, capacity 30 or 50 cubic centimeters; glass stirring rod, light weight.

The following solutions are required:

No. 6, 1-per-cent solution of phenol-phthalein in 94-per-cent alcohol.

No. 7, 0.5-per-cent solution of dimethyl-amido-azo-benzol in 94-per-cent alcohol.

No. 8, 5-per-cent solution of resorcin in 94-per-cent alcohol, to which is added 3 per cent of cane-sugar. Table sugar, maple sugar, and rock candy are the commonest forms in which cane-sugar is to be had.

All of the above solutions are permanent, and, since only two or three drops are used in each test, a small amount is sufficient for a great number of tests.

No. 9, 1-per-cent solution of alizarine sulphonate of soda in distilled water. This solution should be freshly prepared.

No. 10, volumetric solution of soda. To prepare this, dilute 1 ounce of liquor sodæ (solution No. 3) to 16 ounces with distilled water. Measure out 20 cubic centimeters of 0.2-per-cent solution HCl (solution No. 4) into a beaker glass. Fill the burette above the scale with the soda solution, and allow it to run out until the bottom of the discus is on a level with the "0" or first line of the gradu-

[1] This is the third of a series of four papers under the title "Examination of the Stomach Contents," the first of which appeared in the October number of MEDICINE.

ated scale. To the HCl solution in the beaker add two or three drops of phenol-phthalein, which forms a white cloud with the HCl.

Everything being thus ready, allow the soda solution to run into the HCl solution drop by drop, stirring the latter meanwhile. It will be noticed that at first a rose-red color occurs at the point of contact, but quickly fades when the soda is disseminated. Later, the fading occurs more slowly, and eventually a permanent rose-red color indicates that the acidity of the HCl solution has been perfectly neutralized. Great care must be exercised when approaching the point of saturation, since the change occurs quickly by the addition of a drop or two.

Read off from the graduated scale the number of cubic centimeters which have been required to saturate the 20 cubic centimeters of 0.2-per-cent solution of HCl. Suppose, for example, that it has required 17.8 cubic centimeters of the soda solution to neutralize the 20 cubic centimeters of HCl solution, a simple calculation will determine what further dilution of the soda solution will be required in order to prepare a solution of soda one volume of which will exactly neutralize one volume of the 0.2-per-cent HCl solution.

$$17.8 : 20 :: x : 16$$
$$x = 14.24$$

Therefore, dilute 14.24 ounces, or 14 ounces 2 drachms, of the soda solution to 16 ounces, and one volume or 1 cubic centimeter will exactly neutralize one volume or 1 cubic centimeter of 0.2-per-cent solution of HCl.

This empirical solution of soda is easier to prepare than the decinormal solution usually employed, and is simpler to work with. Each cubic centimeter equals .002 gramme HCl. If it required 4.8 cubic centimeters to saturate the free HCl in 10 cubic centimeters of filtrate of stomach contents, 48 cubic centimeters would saturate the free HCl in 100 cubic centimeters. And 100 cubic centimeters of filtrate would therefore contain .096 gramme or .096 per cent or 0.96 part per thousand. The result of the titration is always readily placed in direct comparison with what is considered to be the normal acidity of the gastric juice.

Since those who use the decinormal solution for volumetric analysis commonly state the result in "degrees," corresponding to the number of cubic centimeters of soda solution required to saturate 100 cubic centimeters of the filtrate, it is well to remember that the "degrees" obtained by the process above described are nearly two times (1.8) as many as by the other process. The percentage and grammes and parts per thousand are of course the same.

Having thus far used the customary weights and measures, an apology is due those who are not equally familiar with the customary and metric systems, on account of the use of a burette graduated in cubic centimeters. This limited use of the metric system is rather mechanical and will not be confusing, if having prepared the equivalent solution of soda as I have above suggested it be remembered that it equals 0.2 per cent HCl volume for volume, whether that be expressed in parts, minims, drachms, or cubic centimeters.

Qualitative Tests for Free HCl.—Place a drop of the specimen in a porcelain dish. Bring in contact with it a drop of dimethyl solution No. 7. If free HCl is present there is at once developed a vivid red color. If no free HCl be present only a yellowish coloration appears. This method was suggested by Töpfer.

This is at once the simplest and most delicate test for free hydrochloric acid. The reaction appears if .02 per cent HCl is present. Filtration of the specimen is not necessary; the dimethyl may be dropped into the vessel used in collecting the specimen after that has been removed to the filter, since the adhering particles are sufficient to give the reaction. The vivid red color appears at the point of the contact and radiates rapidly over a considerable part of the surface. When the reaction is doubtful, let a drop of the dimethyl solution No. 7 run down the side of the dish into a drop or two of the filtrate. If free HCl be present the red color will appear in delicate lines along the margin of contact within the filtrate.

Resorcin Test.—When it is desired to confirm the results of the dimethyl test for free hydrochloric acid, the resorcin test (Boas) will be found the most satisfactory. The solution (No. 8) prepared as above directed is sensitive to 0.5 per cent free HCl, is permanent, simple in application, and does not respond to lactic acid. The method is as follows:

One or two drops of resorcin solution No. 8 and the same amount of filtrate of stomach contents are mixed together in a porcelain dish, then gently heated over an alcohol or gas flame. As evaporation proceeds, if free hydrochloric acid be present an intense scarlet color appears at the margin, changing later to a brown or brownish-yellow. Care must be taken not to evaporate too rapidly, or a brownish discoloration only will appear.

I have experienced great satisfaction likewise in the use of the phloroglucin-vanillin test of Gunzberg, and have found the solution without appreciable deterioration after several months, when kept from the light; but it is more expensive than the resorcin test solu-

tion, and no more delicate, and I have therefore come to use the latter exclusively to confirm the reaction of the dimethyl-amido-azo-benzol. The solution consists of phloroglucin 1 part, vanillin 2 parts, alcohol 100 parts; and the test is performed in the same manner as the resorcin test.

Quantitative Estimation of Free HCl (Töpfer's Method).—Take 10 cubic centimeters of the filtrate in a beaker and add to it two drops of dimethyl solution No. 7. An intense red color immediately develops. Since dimethyl reacts only to the free hydrochloric acid and not to the combined hydrochloric acid or any of the other acidities, the color will be discharged when the free hydrochloric acid has been neutralized. This is according to Töpfer, and requires modification (*vide infra*); but it may be accepted with certain limitations.

Therefore fill a burette with soda solution No. 10; run out the excess fluid until the bottom of the discus is at the "0" or first line of the graduated scale. Then allow the soda solution to escape drop by drop into the beaker containing the filtrate, stirring meanwhile, until the red color is perfectly discharged. When the color begins to fade, it is necessary to proceed slowly, since a few seconds is required for the change to be effected. When the color of the filtrate has become yellow, read off the number of cubic centimeters which have been required to neutralize the hydrochloric acid contained in the 10 cubic centimeters of stomach filtrate. Each cubic centimeter represents .002 per cent or .002 gramme HCl. If 5 cubic centimeters soda solution have been used, there must be 0.01 per cent HCl in 10 cubic centimeters of filtrate. In 100 cubic centimeters of filtrate there will be 0.1 per cent, or 0.1 gramme, or one part per thousand. If expressed in "degrees," since 10 cubic centimeters requires 5 cubic centimeters soda solution to neutralize, 100 cubic centimeters will require 50. The "degrees" are therefore 50.

Quantitative Estimation of the Total Acidity (Töpfer's Method).—To ascertain the total acidity of any specimen, which includes the free hydrochloric acid, the combined hydrochloric acid, the organic acids, and the acid salts, principally acid phosphates, measure out 10 cubic centimeters of filtrate into a beaker glass. Add to it two drops of phenol-phthalein solution No. 6, which combines with all the acidities, and will not be discharged until all acidities have been neutralized. Add soda solution from a burette containing 25 cubic centimeters drop by drop until the cloudy filtrate changes its color to a permanent rose-red, as described in the preparation of solution No. 10.

When the quantity of soda solution required to neutralize the free HCl has been previously ascertained, so many cubic centimeters may, in order to save time, be rapidly run out, and afterward the process continued more slowly.

Read off the number of cubic centimeters required to saturate all the acidities in 10 cubic centimeters of the specimen, multiply by 10 to find the "degrees," and state the result in grammes, per cent, and parts per thousand. All the acidities which may be present in filtrate of stomach contents are expressed in terms of HCl.

Quantitative Estimation of Combined HCl (Töpfer's Method).—Measure 10 cubic centimeters of filtrate into a beaker. Add a drop or two of alizarine solution No. 9, which, according to Töpfer, reacts to free HCl, organic acids, and acid salts, but not to combined acid. Add soda solution drop by drop from the burette until the yellow color changes to a clear violet. The process must be continued until the contact of a fresh drop of soda does not deepen the blue color of the mixture, which is then perfectly neutralized. Hemmeter suggests that the soda be added until the color equals that of the blue produced by adding alizarine to a weak solution of sodium carbonate.

The difference between the total acidity and the acidity given by alizarine represents the combined HCl.

The total HCl strength is the sum of the free and the combined acidity.

There are a great many other methods of determining the presence and quantity of HCl in filtrate of stomach contents. Those given above have proven satisfactory, and are quickly and simply applied. When the amount of the specimen is small 5 cubic centimeters may be used for the titration, remembering to multiply by twenty instead of ten to get the "degrees." When there is no free HCl present, the test for peptone will determine whether or not combined acid is present. Indeed, having tested for peptone, and determined the quantity of free HCl and the total acidity, little is gained by ascertaining the exact amount of combined HCl. Practically, only the free HCl and the total acidity need be reckoned with either in diagnosing or treating an excessive or diminished HCl secretion.

Einhorn has called attention to the fact that Töpfer's dimethylamido-azo-benzol test for free HCl reacts in a similar manner to lactic acid, and recommends its use for quantitative analysis only after the phloroglucin-vanillin or the resorcin test has demonstrated the presence of free HCl. It is true that lactic acid in 0.02 per cent will give the same reaction with Töpfer's solution as 0.02 per cent HCl. And what is of equal importance, since the two acids may exist

together in stomach contents, the quantitative estimation of free HCl by Töpfer's method may give too high a percentage. In order to be accurate the percentage of lactic acid when it is present must be subtracted. But these considerations are theoretical rather than practical. As a matter of fact, in those cases in which the secretory capacity of the stomach is under examination, lactic acid will rarely enter in sufficient quantity to constitute a disturbing factor. After the simple test meal it is present only in minute quantity, if at all, at the time that meal is usually withdrawn. In cases of suspected cancer, dilatation, etc., the resorcin test should be used to demonstrate the presence of free HCl. The presence rather than the amount of free HCl and peptone is the matter of greater importance in such gross diseased conditions as carcinoma, pyloric obstruction, etc. Or, to approach the matter from another side, if the absence of lactic acid be first demonstrated by Uffelmann's test, Töpfer's method of determining the presence and quantity of free HCl then becomes perfectly reliable and accurate in any condition.

The secretion of hydrochloric acid begins upon the ingestion of food, and continues until the stomach is empty. The rate of secretion increases rapidly at first, more slowly later, being greatest at the "height of digestion," a variable period, according to the quantity and kind of food taken. After a simple test meal (Ewald's), secretion has reached the climax usually in one hour; after an ordinary or complex meal, within one to two hours.

At the height of digestion the gastric juice contains about 0.2 per cent of hydrochloric acid, so that amount is taken as the normal quantity. At this period, too, the hydrochloric acid exists in the stomach contents partly in the free state and partly in combination with proteids. At the beginning of digestion the acid secreted combines rapidly with the proteids, and no free acid is present for a period varying with the quantity and kind of food taken. If during this period an analysis be made, combined HCl will be found. In some cases also of diminished secretion of acid and large ingestion of nitrogenous food, free acid does not appear until the period of digestion is near its close.

In other diseased states, such as neurasthenia and "nervous dyspepsia," there may be a total absence of acid secretion. I have repeatedly observed temporary anacidity in cases of neurasthenia. Einhorn,[1] under "achylia gastrica," gives the history of cases showing that the absence of acid secretion may apparently be per-

[1] Einhorn: Diseases of the Stomach, p. 324.

manent, and the intestines perform gastric digestion vicariously. In anemic states and chronic catarrhal conditions of the stomach anacidity may occur, while diminished secretion—"hypochlorhydria"—is almost certain. In cancer of the stomach the absence of hydrochloric acid has long been considered of value in the diagnosis.

In other diseased conditions, the secretion of hydrochloric acid is excessive—at least the acidity exceeds 0.2 per cent. If the quantity of free HCl exceeds .25 per cent, it may be regarded as pathological. It may reach 0.6 per cent, though such extreme hyperchlorhydria is rare.

I have elsewhere[1] considered the relation of habitual gluttony to gastric hyperacidity as one of cause and effect, and also the relation of the latter to "nervousness" and overstimulation neurasthenia. Alcoholic stimulants, highly spiced food, a stimulating diet (excessive indulgence in meats), may be mentioned as additional causes; but most often hyperchlorhydria is associated with a general neurotic state. In "nervous dyspepsia," neurasthenia, "nervousness," and some forms of insanity, hyperchlorhydria is likely to be found. It is especially prone to present itself with ulcer of the stomach and reach a high degree.

There may be hyperchlorhydria without symptoms, in perfectly healthy persons. On the contrary, the symptoms classed with hyperchlorhydria may be developed when the acidity is much below .2 per cent. For this reason L. Sansoni[2] is convinced that "hyperchlorhydria," so-called, is in reality merely an exaggerated sensitiveness of the gastric mucous membrane to the hydrochloric acid, which is not necessarily in excess. The hyperacidity may continue or increase after the symptoms have disappeared under appropriate treatment.

But the fact remains that in nearly one-half of all dyspepsias there is an excess of HCl, and treatment which lessens the secretion, or neutralizes the excessive acidity, or both, satisfies equally well the theoretical requirements of the laboratory and the practical demands of experience.

[1] *Journal of the American Medical Association*, June 6, 1900, p. 1467.
[2] *Presse Médicale*, Paris, Sept. 29, 1900.

ONE CASE OF CEREBROSPINAL RHINORRHEA, AND TWO CASES OF NASAL HYDRORRHEA.

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Much interest has been centered recently on the cases of profuse discharge of cerebral origin from the nose. The careful monograph on the subject prepared by St. Clair Thompson, of London, reviews the nine undoubted cases already reported, and the twelve additional probable cases, and discusses at length the differential diagnosis of nasal hydrorrhea, dropsy of the antrum, accumulation in the maxillary sinus, inspired and retained water, flow from vasomotor neuritis, ruptured lymph tubes, lymph nevus, and irritation from polyps. Thompson's own case, No. 3 in the list, has received by far the most careful study of any of them, and the additional data furnished by Halliburton and Hill's chemical analysis of the fluid make the case a classical one and therefore of universal interest.

As early as 1834 begins the record of these cases, the first being a woman 52 years old, who at the time of record had discharged for three months about a quart of clear, limpid fluid from the left nostril every twenty-four hours. The true nature of such fluid was not appreciated for many years after the clinical observation of the early cases was made, Tillaux in 1877 reporting the first case where the fluid had been examined with special reference to its source and its connection with the cerebrospinal tract.

The pathology of the condition is obscure. Hydrocephalus internus has been ascribed as the cause, without much corroborative evidence, nor is the condition hydrocephalus internus a primary pathologic condition. Autopsies were obtained in two of the collection of cases of rhinorrhea made by Thompson. In one, 250 cubic centimeters of clear, yellowish fluid was discharged each day from the left nostril. Death two months later showed meningitis, empyema of sphenoidal sinuses, and left maxillary sinus. In the second case, a pint was discharged every twenty-four hours. Much polypoid trouble preceded this, and an operation for the removal of the diseased tissue was performed; death from meningoencephalitis followed. Both cases gave a history of fluid discharged from one nostril, which gave the tests for cerebrospinal fluid. The frequent association of optic neuritis with the condition is unexplained.

Normally, a certain amount of fluid is secreted in the nasal passage—enough to complete the saturation of expired air; and it is variously estimated that the nasal membrane yields from 300 to 1000

grammes daily. Under the influence of certain drugs, kali iodide in particular, this is greatly increased, as it is also by any irritation, mechanical or chemical. The application of snuff, for example, and bacterial infection are instances of this.

The nasal mucous membrane has been shown by Hewlett and Thompson (Medico-Chirurgical Transactions, vol. 78, 1895) to be sterile under ordinary conditions, and to exert an inhibitory action on germ growth. We know the susceptibility of this membrane to acute infectious processes, for it is held to be the seat of infection in whooping-cough, measles, epidemic meningitis, and although less susceptible than the throat to diphtheria, is, nevertheless, frequently involved in this disease.

Case 1 of our series shows the sterile fluid containing a reducing substance not normally present in the nasal secretion, and appearing under conditions not associated with any usual disorder. Cases 2 and 3 show the exaggerated symptoms which make them resemble this more serious condition. Clinically, the conditions are much the same, and the characteristic chemical test of the fluids is simple.

Cerebrospinal Rhinorrhea. — Miss B——, aged 25 years, came under observation in July, 1898. She had accompanied a friend to my office, and one day incidentally mentioned the fact that she had a most peculiar nose; that, if the occasion should require, it could serve as a "street sprinkler." She rather reluctantly gave me permission to examine her nostrils, being very apprehensive lest the ordeal would be painful. When a child, before the days of cocaine, some cutting had been done, and she had not forgotten the experience. She came to me again on the following day and put herself into my hands. She said that something must be done to stop the flow from her nostrils, which was becoming unbearable, occurring as it often did at most inopportune times. At about this time Dr. St. C. Thompson had published his case of cerebrospinal rhinorrhea, and it occurred to me that this possibly was a similar case. I therefore gave my colleague, Dr. Philip King Brown, several specimens for examination, and his report, which I append, confirmed my suspicion. The patient is a typical California product, with rosy cheeks and erect carriage, tall, and well formed. The flow was first noticed in October, 1897, just before starting for Japan. During her sojourn of three months there it continued off and on, sometimes from one nostril and then from the other, but never from both during the same attack. It was never preceded by headache, but a dull frontal pain always followed it, lasting three or four hours. A tickling sensation between the eyes, similar to that which creeping ants

might occasion, was an indication of its approach. Then very severe sneezing followed, as often as forty times. The attack would begin on awakening, whenever that might be, and would last two or three hours. Then it would stop an hour and begin again later in the day.

A peculiar feature was an apprehension lest she might be embarrassed by the flow when attending some social function, and during the period that she was under my observation the discharge seldom failed to appear, either just before leaving her house or on the way. She was often prevented from eating when attending dinner parties, her attention being specially devoted to catching in her handkerchief the drops falling from her nose. The thought of going to church particularly stimulated the flow; it often started on Sunday mornings after the last touch had been given her toilet. Under these circumstances it was more copious, but of much shorter duration; several handkerchiefs were completely saturated. On drying they would be stiff enough to "stand alone," but in no way discolored. The flow was not affected by the position of the body. Her teeth were unusually good, though sensitive. Transillumination with a five-candlepower lamp gave uuusually satisfactory results in both antra and frontal siuuses. Her general health has been proverbially good. She is far more athletic than the average young woman who prides herself on her muscle and agility. She is a strong swimmer and a fearless horsewoman. The cold plunge is the indispensable feature of her daily toilet. The reflexes are normal. Hearing is excellent. An examination of the fundus shows neither retinitis nor optic atrophy. This observation was confirmed by my friend Dr. W. A. Martin. Vision is 20–20. Sense of smell is unimpaired. Her memory is not as retentive as formerly, probably due to her omnivorous reading. At the beginning of an attack the flow would amount to a drop a second and then gradually lessen. These attacks continued without exception every morning for six months, and often later in the day, under the stress of nervous excitement. Later on, a day or so would intervene, and then a week or so. Three months ago the attack ceased suddenly and absolutely. There had been no change, however, in her mode of living. The condition of her nostrils was practically normal when I first examined her, and it remained so while she was under my observation. The anterior end of the left inferior turbinal was sufficiently hypertrophied to cause a stenosis. I removed the dependent anterior portion, affording relief to her breathing, but in no way affecting the flow. I attempted, several times during the flow, to determine at what point the fluid made its exit into the nose, but the discharge was so plenti-

ful as to obliterate all landmarks. Of the various therapeutic measures employed, atropine gave the only relief, and my patient insists that this drug was the cause of her recovery.

First examination: Five cubic centimeters of clear, watery fluid; no apparent sediment on standing. No precipitate on boiling or on addition of acetic or nitric acid; acidifying with nitric and boiling gave a faint opalescence. No immediate reduction of copper, when a few drops were boiled in Fehling's solution, but on being allowed to stand twenty-four hours a small deposit of the red oxide was seen at the bottom of the tube. Cultures on gelatin and agar negative. Centrifugalized specimens gave no appreciable sediment; nor on standing were bacteria or cells found, except a few large round mononuclear squamous cells; no leucocytes.

Second examination: Special attention was given on this occasion to the reducing substance in the fluid. This specimen had the same general look of the first. To two cubic centimeters of boiling Fehling's solution, well diluted, it was added drop by drop until more than one cubic centimeter had been added. Reduction finally occurred before a second cubic centimeter had been added. The reaction of the fluid was faintly alkaline.

Nasal Hydrorrhea.—Mr. M——, aged 25 years, an instructor in a university, consulted me in May, 1899. He complained of a watery discharge, occurring almost every morning on arising. Inability to breathe through his nose at night was also a cause of great discomfort. The flow was first noticed in 1892; it proceeded from both nostrils, but rather more from the right. It always started from the least obstructed side, and was invariably preceded by violent sneezing. A tickling sensation between the eyes, as if scalding drops were trickling down, was the warning of its approach. It would often last from five to six hours, but usually an hour. Sometimes it would begin when he awoke, as early even as 3 A.M. The inhalation of dust would often start it at any hour of the day. Cauterization, or any operative work within the nostrils, or a severe cold, would stop the discharge for several days. After each attack a dull frontal pain would commence and last two or three hours, its severity depending upon the amount of the discharge. His handkerchief would become stiffened by the fluid as if starched, though in no way stained by it. The position of the patient in no way affected the flow. His teeth were excellent. Transillumination did not suggest any trouble in either maxillary or frontal sinuses. His general health has always been good. He had the usual diseases of childhood. In 1893 and 1894 he suffered from inflammatory rheu-

matism, each attack lasting one week. A slight murmur to-day suggests a valvular lesion. The reflexes are normal. Hearing is unimpaired. An examination of the fundus shows nothing abnormal. This observation was confirmed by Dr. W. A. Martin. There was, as my patient expressed it, an occasional crossing of the eyes, several times a week, a minute or two at a time, at any hour of the day, and independent of the discharge. This condition has grown less frequent, however. His sense of smell is not as acute as formerly. His memory is unimpaired. However, both as student and teacher, he has been incapable of any sustained intellectual effort for several hours after an attack. To quote his own words: "I was intensely nervous. I felt as exhausted as one feels after a severe physical strain." The maximum discharge was two ounces in six hours. At the commencement of an attack, one drachm would flow inside of five minutes. There was a marked stenosis of both nasal fossæ, the inferior meatuses were completely filled with polypoid tissue, attached to the lower and inner surfaces of the inferior turbinals. This I removed. The middle turbinals appeared normal. There was no septal deviation. Two years ago he was treated by a specialist, who cauterized and used a menthol spray. He was discharged as cured, but in a short time the trouble returned. My operations relieved the stenosis, but stopped the flow only a few days. Atropine was tried with but little success; it was also combined with heroin. At the present writing the patient feels that he is somewhat better. The flow continues daily, however, the amount being about the same.

First examination of the discharge: Six cubic centimeters evening flow, and nine cubic centimeters morning flow. Both were clear, faintly opalescent fluids, watery in general, but containing about one-third volume of a perfectly clear mucus. Reaction alkaline. Specific gravity not determined; cultures positive in both cases. Staphylococci and a long bacillus in each case. Sediment contained very few leucocytes. Sheets of mononuclear pavement cells; immense numbers of bacteria. Mostly long bacilli in groups of two, joined end to end or in clumps, but most of them singly, resembling the Pfeiffer influenza bacilli. A few clumps of staphylococci were found. Heavy white cloud when acetic acid was added. No reduction with equal parts of Fehling's solution on heating, or standing twenty-four hours. The second and subsequent examinations added nothing to the case. The amount of mucus varied greatly and seemed proportionate to the amount of cellular detritus. Bacteria were always abundantly present.

The following is another case of nasal hydrorrhea: Miss L——, aged 25 years, has lived in Nevada and California. She possessed a fine singing voice, and was greatly worried by the daily discharge from her nostrils, as she felt that her tones were thereby losing their strength and quality. She consulted me in January, 1898, when her trouble first began. The flow came from both nostrils equally. It was neither preceded nor followed by headache. It would begin in the morning on arising, or better on awakening, and would continue until ten or eleven o'clock. "A crawling sensation far up in the nose would start me sneezing for over five times in succession, at intervals of two or three minutes. I would sneeze so hard as to jar my whole body, leaving me very languid and tired. The drops would often come so fast that they formed a stream. These sneezing spells would last until the noon hour, the remainder of the day being free from them." (The preceding is a quotation from her own history of the case.) Sitting in a draught would cause the sneezing to begin anew, and the flow would continue from ten minutes to half an hour. Her handkerchiefs were not always washed after use on these occasions, and when dried they were soft and pliable and apparently as clean as if never used. The flow was not affected by the position of the patient. Transillumination showed that the antra and frontal sinuses were not affected. Her general health was excellent up to two years ago, when these attacks began. Since then she becomes fatigued on the least exertion. She suffers from cold feet night and day, and her appetite is poor. She has lost ten pounds in weight. Reflexes are normal. Hearing is acute. An examination of the fundus showed neither retinitis nor optic atrophy.

Dr. W. A. Martin's examination confirmed this assertion. Her sense of smell, always acute, lost none of its power, even during a severe cold, or when the flow was at its height. The amount of a morning's flow would fully saturate three handkerchiefs; thirty drops a minute was a common occurrence, and, as before mentioned, they often came so rapidly as to give the impression of a continuous stream. The flow was always increased by catching cold. When perspiring, after physical exertion, a slight exposure to a cold draught would at once produce sneezing, and then the flow would begin. The inhalation of dust produces a similar effect.

First examination: Clear, watery, alkaline fluid; no sediment; no tenacious material mixed with it, but a few flakes of a clear, but denser, substance suspended in the fluid. On the addition of acetic acid and nitric acid a faint cloud appeared. No reduction of Feh-

ling's solution boiled or allowed to stand twenty-four hours. No cellular elements found in the sediment, and no growth on culture media.

Second examination, six months later: Fluid from an attack, sudden in onset, with same conditions. Fluid almost clear, alkaline, watery, eight cubic centimeters in amount. A few threads of whitish-yellow, tenacious substance, intimately mixed with fluid. Plate cultures on agar showed pure culture of streptococcus pyogenes. No reducing substance. Sediment contained streptococci in quantity; few pus cells and epithelial cells, and much mucus.

A careful examination showed nothing abnormal in the nares. An acute congestion even of the nasal mucosa did not necessitate mouth-breathing. A submucous incision along the inner aspect of the inferior turbinals relieved the slight congestion there. Except for an occasional day, this discharge has continued for two years, and nothing that has been tried has been of any avail. She is beginning to feel despondent.

When one notes the symptoms in the nine recorded cases of undoubted cerebrospinal rhinorrhea, and also those in the twelve probable cases (I refer to Thompson's monograph), he would feel that my case could not be the same.

The fact that the attacks began with sneezing, that the headaches followed instead of preceding the attacks, that the flow stopped during sleep, that it was not unilateral in the sense that it never occurred except from the same side, that the position of the head did not affect it, that there were no ocular symptoms except some inflammation of the conjunctiva, all this would make it almost a typical case of hypersecretion of the nasal mucosa. We have fortunately, however, our chemical analysis to corroborate the diagnosis; this tallies in almost every particular with that made by Professor Halliburton, of King's College, London. The unique feature in our chemical history of Case 1 was the appearance of the flow under the stress of nervous excitement, at any hour of the day.

A comparison of Case 1 and Cases 2 and 3 shows so many points of similarity in their clinical histories that the refinements of physiologic chemistry can alone differentiate between them. The stiffening of the handkerchief by the discharged fluid has been pointed out by Thompson as diagnostic of nasal hydrorrhea, and yet in Case 3 it remained soft and pliable and ready for use again as soon as dry, while in Case 2, and also in Case 1, it was stiffened when dry. In

Case 2 a severe cold stopped the discharge, while its effect was to blunt the sense of smell; in Case 3 a cold increased the flow, while at the same time the sense of smell remained most acute. The pathology of my case seems much more obscure than that of the recorded twenty-one cases, as in the majority of these there were cerebral symptoms. Since there are well authenticated cases showing that the cerebrospinal fluid has escaped into the exterior auditory meatus, into the orbital cavity, through the cribriform plate of the ethmoid, by way of the frontal sinus, and, too, without traumatism, I am not unwilling to believe that we are dealing with an accidental opening, through which the fluid passes (possibly a congenital defect in the bone), rather than with a pathological condition. The conditions which could favor the escape of the fluid from the cranial cavity by way of the nose are matters of pure conjecture. Experimental investigation has been limited and unsatisfactory.

Dr. Dudley Tait, of San Francisco, in his recent experiments, has apparently demonstrated an anastomosis between the lymph channels of the nose and the subarachnoid space. After injecting colored fluids into this space, under light pressure, the lymphatic vessels of the nasal mucosa were stained. He experimented upon dogs and rabbits. Similar results have been obtained by others who have been investigating along this line. Schwalbe (1869) found that the colored fluids passed out from the subarachnoid space by way of the perineural sheaths, as well as by the lymphatics, when injected under feeble pressure. The analysis of the fluid in my first case of nasal hydrorrhea would suggest bacterial infection as a possible factor in causing the flow, while in the second case the absence of bacteria would point to a mechanical cause. There has been no permanent improvement in the condition of these patients (Cases 2 and 3). Various therapeutic measures have been tried, but without success. As before stated, the flow stopped suddenly in Case 1, and has not as yet returned. It is a striking coincidence that the age of each of these patients was twenty-five years.

BOOK REVIEWS.

A Treatise on Mental Diseases. By Henry J. Berkley, M.D. New York: D. Appleton & Co. 1900.

This work is based upon a lecture course at the Johns Hopkins University in 1899. The first fifty pages deal with the finer structures of the nerve cells, a description of the cortex, together with the blood-supply and lymphatic channels of the brain. This chapter includes practically all that is known definitely regarding the histology of these structures, as developed in late years by the researches of His, Ramon y Cajal, Nissl, and others. It is interesting and proper that it should be printed with a work on mental diseases, but it has very little relation with what follows, namely, the general pathology of mental diseases.

In his introductory to the general pathology, the author very properly discusses the boundary lines between degenerative and non-degenerative forms of insanity. Of the cell lesions and simple insanities we have but vague ideas beyond that during life we are able to note temporary congestions, vascular hyperemias, and conditions of edema, or the reverse. There is a very good discussion of inherent instability of nerve tissue in certain individuals and of its relation to the development of mental disease. The writer then passes to the discussion of what may be called gross anatomical lesions as shown in the membranes of the brain, cranial bones, together with atrophy of the cerebrum. In discussing the pathology of the nerve cells, the writer says that with the older stains, after the examination of a section of the brain, much doubt was felt as to whether the changes noted were due to the process of preparing the tissue or to disease. The latest technique and the newest stains leave us still somewhat in doubt, but they have added an immense amount to our knowledge of the architecture of the nerve cell and the changes caused in it by disease. The discussion of the changes which take place in arteries and veins as a result of arterial sclerosis is as extended as the importance of the subject demands. Syphilitic vascular lesions also come in for extended description.

In discussing the classification of mental disorders, the writer says that the so-called functional troubles are rapidly being placed in the list of maladies consecutive to inherited disability or injuries from the effects of poisonous substances. Thus acute delirium and puerperal insanity are now classed among those due to an infectious process. A very simple classification is followed. Mental diseases are divided into five groups. The first includes insanities without ascertainable alteration of the brain substance; it is divided into melancholias, of which we have five subvarieties, namely, the simple, delusional, hypochrondriacal, agitated, and stuporous. Mania is included in the first group, and acute hallucinatory confusional insanity is placed as a subtype to mania. Mental stupor or acute dementia furnishes another one of the subgroups, and the other includes the mental enfeeblement which follows the idiopathic insanities as a separate form. This latter class is still further divided into those forms which present slight mental weakness, the chronic delusional insanity, the terminal or secondary dementia having an agitated or passive form.

Group II includes insanities sequential to the organic lesions of the cerebral substance; among these we have progressive paralysis of the insane, syphilitic insanity, senile insanity, and organic dementia. A subgroup is the autointoxication insanities, which includes those from chemical poisoning, acute and chronic alcoholic insanity and delirium tremens, and opium and cocaine intoxication. The second subgroup includes the insanities following bacterial and toxalbumic poisoning. These include insanities of the puerperal period, acute delirium, and the febrile delirium and psychoses. A third subgroup includes the insanities following the autogenetic poisons—diabetic, arthritic, etc.

Group III includes all the psychical degenerates. These are made up of the various forms of paranoia, periodic mania, melancholia, and circular insanity. A subgroup is the psychoses following constitutional neuroses, such as neurasthenia, hysteria, and epilepsy.

Group IV includes the states of arrested psychical development, such as idiocy, cretinism, and imbecility.

Group V includes the psychoses of childhood.

The general etiology, symptomatology, and treatment of the insane are discussed too briefly; the chapter on treatment, however, is excellent, as the writer lays importance on general hygienic management, proper feeding, and amusement, to the wise neglect, we think, of the giving of drugs. A number of plates are found illustrating the types of degeneration as shown in the jaw, and there is an excellent description of the stigmata of degeneration. The majority of the illustrations are original. The work closes with a description of the influence of the tropics upon neurotic individuals and of the psychoses peculiar to tropical regions.

The work as a whole is an excellent contribution to the literature of psychiatry. It is both scientific and practical, and is easily the leading work on this subject in English. It supplies a distinct want which has long existed in American medical literature, namely, a good working manual of mental diseases.

Rhinology, Laryngology, and Otology, and Their Significance in General Medicine. By E. P. Friedrich, M.D. Authorized Translation from the German. Edited by H. Holbrook, M.D. Price, $2.50. Philadelphia and London: W. B. Saunders & Co. 1900.

As the title of this work indicates, it is an effort to bring a special department in closer relation with general medicine, and also to show the relation which exists between diseases of the nose and the larynx and ear. The preface indicates a correct relation of the specialties to general medicine, when it says "there must be a period in the development of a specialty during which those who practice it devote their entire energy to the study of the anatomy and physiology of the new regions and to the creation of a special pathology and method of treatment adapted to the attacks of the parts concerned. Once this foundation is established it becomes important to incorporate the new discoveries in the scheme of general medicine." A specialty should not be regarded as a thing apart, a kind of appendage; it should take an active part in all problems with the solution of which general medicine is concerned. To do this an active cooperation between general medicine and every one of the various specialties is indispensable. Whenever it is lacking the specialty is in danger of becoming a mere source of revenue and of losing its scientific signifi-

cance; while on the other hand, the general practitioner will fail to recognize special symptoms which might have been of greatest importance in the treatment of special cases. This work is a complete departure from the ordinary text-books on diseases of the nose, throat, and ear. It deals with the relation which these structures bear to each other and to general medicine.

The volume begins with some general remarks on the relations existing between the nose, pharynx, and larynx, and the effect of diseases of the upper air-passages upon disturbances of the lungs. Chronic bronchitis is said to be a frequent sequel of diseases of the nose and its tributary cavities. A secondary consequence of such bronchitis is pulmonary emphysema. Scleroma of the upper air-passages is one of the rare conditions which sometimes lead to bronchial changes. Diseases of the lungs are frequently accompanied by changes in the upper air-passages. Any chronic disease of the lungs in which sputum is secreted is followed sooner or later by chronic pharyngeal and laryngeal catarrh. Croupous pneumonia is sometimes followed by laryngeal complications. The diseases of the mediastinum cause paralysis of the recurrent laryngeal nerves, and tumors in this region frequently displace the larynx.

The relations between the upper air-passages and the ears refer almost exclusively to the Eustachian tube as a ventilator of the middle ear. This relation is expressed under two heads—those due to alterations in the tube caused by swelling, and those due to infection of the ear from the postnasal space.

In the chapter on diseases of the circulation in their relation to the nose, throat, and ear, we are told that pericardial exudate occasionally gives rise to paralysis of the left recurrent nerve. Palpitation of the heart is one of the reflexes due to irritation of the nose. Tinnitus aurium is a frequent symptom of disease of the heart and blood-vessels.

The author adopts the mechanical theory to account for the changes in the form of the mouth due to nasal obstruction. Disease of the teeth is said to play an important part in relation to that of the nose. Dyspnea is said to be often associated with inflammation of the nose and pharynx. Disease of the stomach often leads to disturbance of the nose and throat. The teeth are not a frequent source of ear disease, but neuralgia localized in the ear after caries of the teeth appears to be definitely proven. Purulent otitis media and caries of the teeth are not related as cause and effect. In those cases in which impaired hearing comes on after the filling of a tooth, it is probable that the patient originally referred the pain from an acute otitis media to a tooth. Pus in the middle ear may make its way to the pharynx and to the stomach, thus causing a disturbance of digestion.

In anemia there is pallor of the mucous membrane often associated with hyperesthesia of the nose and a dryness and tickling in the throat. The adductors of the vocal cords are often weakened. Tinnitus, vertigo, and occasionally difficult hearing are sometimes found in anemia. It is probable that these are due to impairment of the nutrition of the end organs of the auditory nerve. The theory that seeks to explain tinnitus as due to noise of the blood-stream lacks confirmation. In leucemia, epistaxis and aural complications are quite frequent, the latter being due to hemorrhage. The hemorrhagic diathesis is accompanied by the same changes in the mucous membranes that are noted upon the skin.

From 75 to 90 per cent of the cases of laryngeal spasm suffer from rachitis. The writer denies that this spasm is a symptom of tetany. Of the relation of rachitis to aural disease nothing positive is known; the attempt to establish a connection between the former and purulent or catarrhal disease of the middle ear has been made, but there is not a shadow of proof to justify it. Diabetes is said to have quite a characteristic ear affection marked by the sudden onset of violent pain, sometimes localized in the ear, more frequently in the mastoid. After a longer or shorter interval perforation takes place and pus is discharged. In a remarkably short time the diabetic otitis spreads to the bones and there is a rapid disintegration of the mastoid cells. The process is much more rapid than in cases of malignant diphtheria. The ear complications of diabetes are distinct from the ordinary form simply in their rapidity and the early implication of the bone.

Acute infectious diseases furnish the majority of ear complications. Scarlet fever plays a more important part than any of the other infectious diseases. Among the chronic infectious diseases, tuberculosis and lupus, as affecting the ear and larynx, are extensively considered. A striking statement is that of the author in reference to the spread of leprosy from nasal involvement. Sticker is quoted as having examined 153 lepers. In only thirteen was there an absence of nasal complications, and in nine of these the nasal secretion was found to be swimming with the lepra bacillus. An exhaustive discussion of the relation of nervous diseases to the air-passages and ear, and an appendix on the various reflex conditions, close the book.

HEART DISEASE IN CHILDHOOD AND YOUTH. By Charles W. Chapman, M.D. Price, three shillings and sixpence. London: The Medical Publishing Co., Limited. 1900.

In his preface the writer tells us that this small work of 100 pages has been written with the object of giving the reader a perfect outline of the usual varieties of heart disease as they occur in young persons. Acute cardiac affections, which are, for the most part, complications, or a general febrile state such as rheumatic fever, do not fall into the scope of this work and are only incidentally touched upon. Attention is directed to the hygienic management of young patients with heart disease, and the questions of education and sports in such cases are discussed.

The author speaks of the frequency of pathologic changes in the heart in children, diseases of this organ being nearly as frequent in children as in adults. It is now admitted to be far more common than was formerly supposed. The incidence of heart disease in childhood and youth is different from that of adults. In the former there is great activity of nutrition, while in the latter degenerative changes must be considered. The heart complication most to be feared in the course of rheumatic attacks in children is pericarditis. The distinction between effusion and dilatation is often very difficult. One should never argue that a sudden increase of cardiac dulness means effusion. The crippling effects of adherent pericarditis are referred to. The writer is of the opinion that chorea is essentially rheumatic. In children the joints and heart are not always concurrently affected. A rheumatic pericarditis may precede the arthritic symptoms, and an endocardial lesion may develop or become recognizable many weeks after convalescence from rheumatic fever. The rheumatic

affection may be so slight as to attract little or no attention, and yet the cardiac symptoms may be very pronounced.

The general prognosis of heart disease in children is set forth by a table:

Less Serious.	*More Serious.*
1. There has been but one attack of rheumatic fever.	1. There have been several attacks of rheumatic fever.
2. The general health has been good since the fever.	2. The general health has been indifferent and the attacks have recurred at short intervals.
3. The general nutrition is good.	3. The general nutrition is bad.
4. The family history is good.	4. The family history is bad.
5. There is good compensation, the apex beat is strong, the radials fill well, and do not readily collapse.	5. The impulse is weak, the apex beat diffused and feeble, the radials fill imperfectly, and some of the cardiac contractions do not reach the wrist.
6. The heart failure, if present, is recent; the liver is not much enlarged; there is no edema of the lungs, no swelling of the ankles, no albuminuria.	6. There have been previous attacks of heart failure; the liver is below the umbilicus; the lungs inflate imperfectly and are dull on percussion.
7. The color is good.	7. There is cyanosis.
8. The digestion is good.	8. Food scarcely retained.

In the management of heart cases in children, hygiene is of the utmost importance. Those children with cardiac disorders should be seen at least once a year by the physician and have their lives carefully regulated. Food should be taken at regular intervals and should be always followed by a rest of from ten to thirty minutes. Stimulants, especially alcoholic, should not be used, except in emergencies. Education should not be interfered with, and sports and games are of especial value where no definite structural change exists, but the heart is merely weak. There are cases in which to allow anything beyond moderate exercise is sure to bring disaster. Only general rules can be formulated regarding exercise, but as a general thing those sports that demand sustained, competitive, or sudden exertion, such as swimming, football, racing, etc., are to be interdicted. Bicycling under restrictions is approved of. The Whitely exerciser is recommended for indoor use. Exercises which require fixation of the chest, such as rowing, are not to be used in heart cases.

The last part of the work is taken up with the description of thirty-two cases of heart disease in children. They are carefully described and form a valuable addition to the literature.

LESSONS ON THE ANATOMY, PHYSIOLOGY, AND HYGIENE OF INFANCY AND CHILDHOOD, FOR JUNIOR STUDENTS. By Alfred C. Cotton, A.M., M.D. Price, $1.50. Chicago Medical Book Company.

This is a small volume consisting of extracts from lectures given at Rush Medical College. The course on diseases of children in that institution is included in the junior and senior years. The juniors are instructed in the anatomy, physiology, and hygiene of infancy and childhood, while the seniors study the diseases and treatment of the affections peculiar to that period. An examination of the volume shows that the author has collected in a small book of 174 pages a great deal of valuable information upon the care of young children. In his introduction he says that far too little attention has been paid to the hygiene of infancy. Wherever attention is given to the subject there follows at once a marked decrease in infantile mortality.

The first four chapters are devoted to a description of the anatomy of the infant. In this is brought out very clearly the essential differences between the adult and the infant. There is a brief, concise description of the various organs and bones as found in infancy. Then follows three chapters upon normal growth. In these chapters an anatomical arrangement and description of the different organs, their relative increase in size, and relation to each other, are given.

There are five chapters dealing with the physiology and hygiene of the newly-born. These include a description of respiration and circulation, with the changes which take place in the blood in the first few days of life. Valuable instruction is given as to the method of preserving a uniform temperature about the child, and of the best practical methods of dressing young children. There is a short chapter on the hygiene of the prematurely born; then follows an account of the first year, and the method of feeding children who must be artificially nourished. There is an excellent short chapter on milk analysis.

The work is especially prepared for undergraduates, but will be found very useful by the practitioner who wishes a concise short statement of the physiology and hygiene of infancy. Most of what is found in its pages will be met in the larger treatises on this subject, but it can only be obtained by patient study of large works. Here we have in condensed statement nearly all that is practically useful. There are numerous illustrations, charts, and a few skiagraphs, which add to the value of the work.

The proof-reading is not all that could be desired. For example, the legend of Fig. 26 tells us that there is there shown a "foreign body in the upper construction of the esophagus." On page 47 we are told that the fluid contained in the thyroid cells of the newly-born is "serious" in character. These, however, are only minor defects in an otherwise excellent little work.

A Treatise on Diseases of the Nose and Throat. By Earnest L. Shurly, M.D. New York: D. Appleton & Co. 1900.

In the preface the author tells us that this ambitious work of 744 pages is prepared for the general practitioner and medical student rather than the specialist. For this reason he refrains from discussing matters that are speculative, and confines himself rather to those which experience or observation has shown to be of practical value. Especial attention has been paid to therapeutics.

In his description of the anatomy of the upper air-passages, there is nothing that calls for special comment, excepting to refer to a number of very excellent plates illustrating the anatomy of the sinuses and the turbinate bodies. The chapter dealing with the examination is not as full as it should be, but the most practical and useful methods are described. In the matter of treatment the book leaves little to be desired, and for this reason alone it is especially to be commended to the general practitioner who is seeking relief for his patients.

The author devotes four pages to the treatment of acute rhinitis. Cocaine, combined with menthol, salol, and boric acid, is spoken of as being useful in aborting this affection. We do not believe that it is ever justifiable to use cocaine in the nose in acute coryza, and certainly under no circumstances should it be placed in the hands of the patient. The majority of the cocaine habitués that have so far come under observation are those who have employed the drug to remove nasal congestion.

The chapters on influenza and diphtheria leave little to be desired. Antitoxin serum is recommended in the treatment of the latter disease. There is a short chapter on diseases of the nasal passages, pharynx, and larynx depending upon the exanthemata of the essential fevers. Unfortunately, there is no reference to the great frequency with which ear complications occur in the fevers of childhood. In the treatment of hay-fever, which is included in the group of neuroses, there is no mention of the prophylactic use of tincture of ragweed, goldenrod, and other common plants which are said to be so efficacious in the relief of this trouble. The use of a spray made with suprarenal extract is commended. There is an excellent chapter upon paralysis and paresis of the pharynx, and a full discussion of functional aphonia.

Syphilis, lupus, and tuberculosis of the upper air-passages are considered at length. The writer believes in the tardy development of congenital syphilis, relating as a case in point the unique report of J. H. Bryan. The chapter discussing the chronic diseases of the upper air-passages is the most lengthy in the book. In discussing the reduction of the turbinated bodies, the author leans to the use of the galvanocautery, quoting Ingals's statistics of the freedom from complications with this treatment when properly used. The submucous linear cauterization of Pierce is described, but it is not apparent that the author has had any experience with it.

The *bête noire* of the rhinologist, chronic atrophic rhinitis, is discussed at length, but very little is added to our knowledge of its treatment. The vibratory massage of Braum is referred to as a satisfactory method, and also the tampon of absorbent cotton suggested by Gottstein. In dealing with hypertrophied faucial tonsils, the various methods are described which the author thinks are practical in different cases. He evidently prefers for most patients ordinary tonsillotomy. Ignipuncture and electrolysis are measures which deserve consideration. There is no mention of complete removal of the tonsil by dissection with the galvanocautery knife, as described by Coulter. This we believe to be the best means of dealing with a diseased tonsil—to remove it completely, leaving the wall of the pharynx smooth.

The work closes with a number of beautiful lithographed plates taken mostly from Grunwald, showing tumors of the larynx and various inflammatory conditions of the pharynx. There is a reproduction of the plate of Schnitzler, showing hyperemia of the larynx and acute laryngeal catarrh; also a section of the tonsil by Wright, showing mycelial infection. From the standpoint of the bookmaker, the volume leaves nothing to be desired.

LEADING ARTICLES.

INTRADERMIC SUTURE.[1]

A good operation should leave the slightest possible trace after the parts have healed. No part of surgery has attracted more attention of late than suture of the skin. In women especially are scars greatly feared in exposed portions of the body. Of all methods of skin suture, the intradermic is best, and if executed by one skilled in the method, union should be perfect with scarcely any cicatrix. Not only from an esthetic standpoint should scars be avoided, but a bad cicatrix often causes pain and sometimes leads to ulceration and not infrequently functional troubles. A good cicatrix can only be obtained where there is primary union, and this is only possible under good antiseptic, or better aseptic, precautions. The preparations for intradermic suture are very simple. All that is needed is surgical needles, rather small, highly tempered, and of medium curve, and a strong needle holder. Commonly "oo" catgut is employed. The use of delicate suture material prevents undue tension upon the skin, as traction, if at all severe, would result in its rupture.

FIG. 1.—Subdermic suture. Method of passing the thread. The transverse section shows the coaptation of the tissues after the suture is tied.

The subdermic suture is illustrated in Fig. 1. The needle is passed under one of the lips of the wound just below the skin and is brought out before the lower portion of the wound is reached. The bottom of the wound is picked up with a pair of toothed forceps and pierced as shown in the figure, the opposite wall is entered, and the needle brought out just below the skin on the opposite side. The suture passed in this way takes very little time and accurately coapts the subcutaneous tissue. This is shown in the lowermost diagram of Fig. 1. It completely obliterates all cavities that ordinarily contain fluid and offer favorable foci for the development of microorganisms.

[1] Translation of an article by E. Juvara: *La Presse Médicale*, Oct. 3, 1900.

Intradermic suture (Fig. 2) or longitudinal suture of the skin: A small needle is threaded with "oo" catgut, which is anchored at one end of the wound by a short piece of thick silk or a small glass ball. Five or six millimeters from the angle of the wound the needle enters the edge of the skin and is brought out below its surface; the needle is then kept parallel with the edge of the skin, but below the surface, the needle being entered at opposite portions of the deep portion of skin. Arriving at the opposite extremity of the wound, the suture is terminated in the same manner that it was begun. The application of this suture secures perfect results, but is somewhat difficult to apply, as the stitches must be taken exactly opposite each other and must only include a certain portion of the skin.

FIG. 2.—Method of anchoring the thread in intradermic suture.

Transverse intradermic suture (Fig. 3): This suture was devised and employed in 1883 by Severeanu, and differs from the foregoing in that the thread does not describe an undulating line, but a spiral. It is made with a small curved needle threaded with "oo" catgut. It is begun at one extremity of the wound by fixing the margin with a toothed forceps. The point of the needle is carried from the deep to the upper portion of the skin and brought out near its margin. This is repeated upon the opposite side, the needle being reversed, pointing from above downward, at a distance of seven or eight millimeters. This suture gives a linear cicatrix. The advantages claimed for it are that it is easy and rapid in execution and is claimed to have some advantages over the longitudinal suture in the fact that the skin is not penetrated to the same extent and there is not as much danger of hypertrophy.

FIG. 3.—Passing the thread in Severeanu's method.

The zigzag suture (Fig. 4) was devised by Severeanu, and is

especially employed by the latter operator about the face and for cleft palate. In the application of this suture, catgut of the size "o" or "oo" is employed, and the suture is anchored in some convenient way at the end of the wound; it traverses the skin from without inward. After crossing the wound it is brought out and again introduced opposite the same opening, the procedure being repeated until the end of the wound is reached. The mechanism of the suture is admirably shown in the figure. When closed the wound presents an undulating surface with a number of small openings in the skin, which commonly heal without leaving a scar.

Fig. 4.

Intradermic suture is indicated where it is desirable to avoid a scar. It is especially important in operations about the face, the neck, and all other portions exposed to view. In operations which are greatly prolonged and laborious, the suture is not practical, as here rapidity is of the utmost importance, and many things must be sacrificed to it.

TREATMENT OF TAPEWORM.

Little has been added of late years to our knowledge of the treatment of this somewhat common affection. Any one referring to a work upon materia medica or practice will be surprised at the number of remedies which are recommended for the removal of tapeworm. In actual practice it is found that with all remedies there are a considerable number of failures. For certainty of results the ethereal extract of male-fern easily leads the list.

If the entire worm is not removed it will grow again, so that it is quite important to find and identify the head, that the patient may be assured of a cure. Theoretically the head is supposed in some cases to be attached in the folds of the intestine in such a way that the valvulæ conniventes protect the head from the poisonous action of the anthelmintic. The late Professor Agassiz suffered from a tapeworm for many years, which resisted all efforts at removal. He was accustomed to use his personal worm in the class-room

demonstrations. It is not known that his general health suffered from the parasite.

It is commonly believed that the *Tenia solium*, or pork tapeworm, is a common parasite in this country, but such is not the case; it is by far the most frequent parasite in Europe. In this country the beef tapeworm, or the *Tenia saginata*, is by far the most frequent. In not more than one case in twenty in this country is the variety of worm the *Tenia solium*. There are a number of varieties of tapeworm, but they are rare in man, and some which occur in the human have never been found in this country. The treatment of the beef and pork tapeworms is identical.

The remedy most frequently employed is the extract of male-fern. Pumpkin seeds are effectual sometimes, but the dose is very large; it is sometimes difficult to keep it on the stomach, and it is not always easy to procure the pumpkin seeds in a comparatively fresh condition. The more recently they have been gathered and the care with which they have been kept determine to a large degree their efficiency. At least four ounces of the seed should be employed, the cortex removed, and the kernel bruised in a mortar with sufficient fluid to admit of the mixture being drunk. The distinct advantage of the pumpkin seed treatment is its freedom from poisonous properties, but it is somewhat less efficient than the male-fern and more difficult of application.

In using male-fern, poisonous results, and in rare cases death, have been noted. These cases were attended with nausea, vertigo, syncope, convulsions, and unconsciousness. Delirium may be present, and in fatal cases this passes into coma and death. Occasionally there is contraction of the retinal arteries with temporary amblyopia and amaurosis, which sometimes is followed by optic atrophy. The anthelmintic as well as the toxic properties of male-fern are to be found in the filicic acid. This is said to be freely soluble in oils; hence, theoretically it is supposed that the poisonous properties are increased by the coincident administration with castor oil. Of the truth of this statement we are not sure. One thing is certain, that experimentally it has been shown that the toxic action of male-fern is much less upon the worm in the presence of oil. One German observer found that in an ethereal extract of male-fern a worm would live but one hour, while another worm retained its vitality six hours in the same strength of solution, provided castor oil was added to it. The theory of this observer was that the oil protected the worm. It is difficult to see how the claim of Grawitz can be maintained, that the male-fern is more toxic if followed by oils. Be this

as it may, it is certain that castor oil should not be given as an accompanying cathartic with male-fern. Another common practice is to starve the patient for a day or two, or at least withhold all food for twenty-four hours preceding the administration of the fern. Such practice is of doubtful propriety, as the stomach is rendered somewhat irritable, and the susceptibility of the patient to the toxic action of the drug is markedly increased by the fasting. There is no good evidence to the effect that this fasting has very much effect upon the worm. On the day that the dose is administered it is perhaps well that the patient should take no breakfast, and a saline cathartic might be administered the preceding night without objection.

The male-fern is preferably administered in combination; the best adjuvant is kamala. This substance is certainly a valuable and much neglected tænicide, and at the same time it is a brisk cathartic. One drachm of the normal liquid of tincture of kamala, combined with one drachm of the ethereal extract of male-fern, the whole made into an emulsion of about two ounces, forms a most efficient combination and one that is quite free from toxic properties in the absence of special idiosyncrasy. Such a dose administered upon an empty stomach in the morning is almost invariably followed by the expulsion of the entire worm early in the afternoon.

It is difficult to find and identify the head of the worm. This is due to the fact that it is easily broken, and if the passages take place into an open vessel the neck of the worm is easily broken. This may favor reattachment of a loosened worm further down in the intestine, and it is avoided by having the contents of the bowel discharged into warm water. This prevents contraction of the worm with a consequent breaking, and enables us to readily find and identify the head in case it is passed.

A method which has been referred to in MEDICINE is that of J. W. Kime, of Iowa, who has devised a means of directly poisoning the worm. After a portion of the worm has passed, and while it is still attached, a string is tied around the broken portion and a half-grain of morphine is injected into its body. The tapeworm is said to have circulating tubes between each of the segments, and this injection is said to effectually poison the worm so that the head comes away entire. This ingenious method of getting rid of tapeworm is worthy of further trial. Since the original publication over a year ago, we have seen no reference to it in the literature.

EDITORIAL COMMENT.

RECENT DEVELOPMENTS OF PLAGUE.

We have written so frequently in these columns of the probability of plague developing in the United States, that we feel an apology is due for again calling attention to the matter. The recent appearance of the plague in Glasgow and San Francisco reminds us of the danger. The unseemly medical controversy in California will, we hope, not be repeated, though such exhibitions often occur when vast commercial interests are involved. If there is any doubt on the part of board of health officers as to the presence of so grave an epidemic as plague, the leaning should be toward the affirmative, as that is the side of caution. If it should eventuate that a suspected disease is not plague, there will have been at least only temporary inconvenience, while its non-recognition in a true epidemic is fraught with grave disaster. A consideration of the evidence at our command points with great probability to the specific character of the epidemic. Time will most certainly prove its true nature; recrudescence is a marked peculiarity of plague, as every epidemic so far reported has shown. When plague is identified, an active crusade is instituted, and soon after the first scare is over the authorities confidently tell us that the disease is under control or has been stamped out. Six months or a year later the plague appears with added virulence. This, we expect, will be the experience of Honolulu and San Francisco. Very recently we have learned of a recrudescence of plague in Osaka, Japan, where last winter an epidemic was "stamped out." The experience of Calcutta is in point; the plague appeared in three successive years, each time with added severity.

In sounding a warning on its probable development in this country it is not our intention to terrorize the community, nor to urge that there is any probability of having the disastrous and extensive epidemics which were noted in the middle ages repeated. Such an epidemic as the great plague of London is not possible in any modern city, from any epidemic disease, however virulent. While such is the case, the plague is a real danger, and like smallpox and other infectious diseases with which we are tolerably familiar, it must be fought vigorously. We have been told that it is especially fatal and frequent among Asiatics, and that the western races are comparatively exempt. Such has not been found to be the case. A study of the development of plague among the Caucasians

shows that race affords no immunity. So far as the Caucasian has proper hygienic surroundings and clean, airy, vermin-free houses, he is in a large measure protected against the invasion of the plague. When, however, he lives like a low-class Asiatic, his chances of escape are no better. We fear that in most of our large American cities there are quarters in which the housing of the poor is not much better than it is in Calcutta or Bombay, the chief difference being that their poverty comprehends perhaps nine-tenths of the community, while with us abject squalor is found in less than one-tenth.

The reason that an epidemic of great proportions is scarcely possible is due to the fact that the plague is known to be dependent upon a bacillus, and the general principles of fighting an epidemic of this character are now quite well understood. Cleanliness, both personal and civic, is to be insisted upon. While we know that the bacillus of Kitasato is the cause of plague, we know comparatively little as to its method of dissemination. It has been shown that the plague is pathogenic for rats, and there is considerable evidence to the effect that rodents are among the chief disseminators of the disease. There may be unknown methods of disseminating the plague.

The chiefest difficulty in dealing with the plague is the fact that its clinical symptoms are so uncertain. In only a minority of the cases do we have the suppurating bubo which gives the name to the disease. It may begin with all the clinical symptoms of pneumonia, or it may present an influenza type; again, there may be simple nervous depression, without marked inflammatory reaction. All these various types make the clinical recognition of the disease extremely difficult, and it thus happens that plague may exist for weeks or even months in a community before its true character is recognized. A few cases of the glandular type may lead to the suspicion, and a careful bacteriological examination would of course identify the morbid agent. It is this peculiar and uncertain type of the disease which makes it so exceedingly difficult to deal with by the health authorities.

Quarantine has proven to be worse than useless, as sooner or later, where there is much interchange of commerce, it gains entrance, and once domiciled in a place it is exceedingly difficult to get rid of. A reliance upon quarantine is certain to lead to disappointment. Active hygienic measures and improvement in the sanitary conditions of the crowded quarters of our large cities are the only possible means of preventing a considerable epidemic.

ERGOT IN THE TREATMENT OF HEMORRHAGE.

There is an altogether too prevalent idea that ergot is useful in certain forms of hemorrhage. We are quite confident that in some cases of cerebral hemorrhage, many cases of hemoptysis, gastric hemorrhage, and other conditions, this remedy is employed. It is not generally recognized that hemorrhages, whether capillary or otherwise, into a hollow viscus, with the exception of the uterus, contraindicate the use of ergot. The brilliant results that have been reached in the administration of ergot in uterine hemorrhages have led to its employment in other conditions where the effect of the drug tends to aggravate the hemorrhage. In postpartum hemorrhage ergot is of undoubted use. This, however, is not due to the fact that ergot contracts the peripheral arterioles, but it is due to the action which the drug has upon muscular fibers of the uterus, causing their contraction and thus occluding the opened veins. The enlarged uterus is the only organ in which we can hope to have a cessation of hemorrhage from the use of ergot. It is of doubtful utility in uterine hemorrhages where there is no enlargement of the organ, as here the muscular fibers are not sufficiently in evidence to play an important rôle in limiting the blood-supply to the mucous coat. The effect of ergot is to raise vascular pressure, and this always means an increase in the hemorrhage. If the vascular pressure is much increased, it overcomes the little additional resistance furnished to the escape of the blood by the contraction of the capillaries in the hemorrhagic area.

Cessation of hemorrhage is brought about by the coagulation of the blood in the torn capillaries or the ruptured arterioles. The muscular injury to arteries which includes a tearing of the internal coat favors coagulation. It is also materially assisted by a low blood-pressure, and many a life is saved after the injury of a large vessel by the coincident shock, which so lowers vascular pressure that the hemorrhage is spontaneously arrested. The application of these primary principles shows why the drug is contraindicated in all hemorrhages excepting those of the enlarged uterus. Any drug which increases vascular pressure favors a continuance of the hemorrhage; in hemoptysis, gastric and intestinal hemorrhages, ergot should never be given. The remedies which should be employed are those which lower vascular pressure, namely, nitroglycerin, the nitrites, and possibly gelatin. Late therapeutic experiences show that the local applications of solutions of gelatin are powerful styptics, and there is some evidence to the effect that the same substance when taken internally is useful, increasing the coagulability

of the blood, and thus favorably influencing a local hemorrhage. One of the most powerful of the local styptics is the suprarenal extract, and in cases where it can be brought in contact with the capillary surface, it causes an immediate blanching of the surface with an arrest of the hemorrhage. There is reason to believe that this substance should not be given internally for the same reason that ergot should not be given, namely, that it causes an increase in blood-pressure and so would favor hemorrhage. Applied locally to a surface, this objection does not apply, though it is to be remembered that a certain absorption takes place, and in so far as this obtains blood-pressure would be increased, and the local constringing effect lasts at most only an hour or two. After this passes off there is an increased liability to a recurrence of the hemorrhage. It will be seen, therefore, that the true remedy for hemorrhage is not suprarenal extract, but the local application of gelatin solution, and its internal administration combined with those internal remedies which lower vascular pressure by dilating the capillaries.

SPINAL ANESTHESIA DURING LABOR.

S. Marx, in the *Medical Record* of October 6, 1900, reports twenty-three cases of labor conducted under spinal anesthesia. He uses the term medullary narcosis, which we believe to be an unfortunate one, as the term "spinal anesthesia" is in consonance with "local anesthesia," and distinguishes it from the latter as well as from the term "general anesthesia," by which is meant that which is produced by the inhalation of ether, chloroform, or nitrous oxide gas. The writer states that he has employed this method of anesthesia and has never observed symptoms that made him apprehensive of immediate or remote danger; in fact, he has never had such smooth convalescence as since experimenting with this new method of anesthesia. All the children alive before delivery were born alive, in spite of the fact that there were many difficulties and trying labors encountered.

The writer has had occasional difficulty in entering the spinal canal, and says that the escape of cerebrospinal fluid is the only possible means of knowing when the subarachnoid space has been entered. In no case in which he injected the cocaine after having obtained the cerebrospinal fluid was there a failure in anesthesia. That the puncture is attended with great difficulty in some cases is shown by the fact that the writer in one case made six distinct punc-

tures before the tap revealed fluid. In one case where there was antecedent lumbar disease, the writer made the puncture in the dorsal region, having failed absolutely to enter the spinal canal between the lumbar vertebræ.

The puncture in the dorsal region which the writer describes is the first that has come under our observation. The difficulties, owing to the overlapping of the spines of the vertebræ, would certainly be much greater in this region, and we should fear wounding the cord. The writer lays stress upon strict asepsis in the performance of the operation, and in making the injections he uses a highly tempered steel needle. In this he does not follow most writers, who recommend that the temper of the needle should be drawn to prevent the possibility of its breaking. If after the needle is introduced blood flows, the writer is of the opinion that the needle has passed deeper than the subarachnoid space. Its slow withdrawal will occasionally result in the appearance of the cerebro-spinal fluid.

The dose employed has been usually about one-fourth of a grain, the maximum being one-third. In one case he used as much as one-fourth of a grain in one hour.

The writer repeats his former statements (*Medical News*, Aug. 25, 1900) that complications of a severe nature have never taken place, but disagreeable symptoms have frequently appeared and are the rule. They last about twenty-four hours, and consist of nausea, severe vomiting, and profuse perspiration. A chilly sensation accompanied by a temperature of from 100° to 103° is frequently present, and is attributed to intraspinal pressure due to the injection. These disagreeable symptoms are easily controlled by $\frac{1}{100}$ grain of nitroglycerin with morphine. In one case in which one-sixth of a grain of morphine was injected into the canal along with the cocaine, there developed marked symptoms of morphine intoxication. He has had good results in the use of $\frac{1}{200}$ of a grain of the hydrobromate of hyoscine as soon as the symptoms arose.

In commenting upon this article, we cannot but reaffirm the warning which we expressed in the November issue of MEDICINE, namely, that while the subject of spinal anesthesia forms an attractive topic and one which will probably lead to the development of a method which would prove to be serviceable in general surgery, yet the dangers of the method are such that the early efforts in this direction should only be made in the large clinics where thorough asepsis can be secured. The indiscriminate application of the method will certainly have such disastrous consequences in indi-

vidual cases that it may result in the whole procedure being dropped as dangerous.

We had certainly hoped that eucaine, because of its lessened toxicity, would have proved a good substitute for cocaine. So far as we know it has been employed three times, once by Dr. Murphy, once by Dr. Andersen, and once by Dr. Marx. Murphy used a two-per-cent solution with no results; Andersen used a four-per-cent solution and obtained an anesthesia lasting several hours, the results being most satisfactory; the strength of the solution used by Marx is not stated in his paper.

Marx in his paper speaks of two possible dangers: (1) collapse from cocaine; (2) sepsis from the puncture. To these we would add a third, namely, hemorrhage into the spinal canal. This latter danger is, of course, largely theoretical, but it is reasonable to suppose that a needle thrust between the laminæ of the vertebræ might easily puncture a vein and thus lead to a hemorrhage, which even if small in amount, might cause considerable damage to the delicate nerves in this situation.

THE REVIVAL OF CARBOLIC ACID.

Carbolic acid is a misnomer, as the substance so called is not an acid. Its proper name, phenol, seems still a long way from general adoption, and perhaps it is not well to urge the change, as the results might be serious, due to a misapprehension of the less frequently employed term. Carbolic acid has had a singular history. In the seventies it was regarded as the first of antiseptics. Later its poisonous properties were recognized and it fell into disuse, and other more powerful and less dangerous antiseptics came into vogue. The symptoms of poisoning by carbolic acid, the nephritis with its albuminuria and smoky urine, are so well known that they need no description. The occasional occurrence of such severe complications led to a reduction in the strength of carbolized solutions used in surgery until their antiseptic value was practically *nil*. At the same time their poisonous properties were not very greatly lessened. Of late attention has been directed to the frequency with which carbolic acid causes gangrene, particularly of the fingers and toes. This effect is produced when very dilute solutions are employed, if they are kept in contact with the parts for several days. The observation of Palmer that alcohol was a perfect antidote for strong carbolic acid bids fair to give the drug a range of usefulness that it has never before had. It is apparent that it is the amount of carbolic

acid which is absorbed that causes its poisonous properties. A dilute solution having little or no effect in occluding the vessels is very readily taken up. Strong carbolic acid, on the contrary, seals the vessels and prevents absorption. By the term "pure" or strong carbolic acid is meant the liquefied crystals, the solution containing about 95 per cent of the acid. Experience has proven that this may be applied to an excoriated or ulcerating surface almost with impunity, so far as absorption is concerned. The depth to which the caustic may extend is variable. Before the neutralizing effect of alcohol was known, the strong acid was rarely used, as it was impossible to know how deep it might go. Now a strong acid may be applied and left for one or two minutes, or even longer if it seems desirable, and its action can be immediately suspended by the application of alcohol.

This application of the strong acid seems to be the best method of treating a suppurating focus. An abscess may be washed with it, destroying the pyogenic membrane, a single application making the cavity aseptic. This followed by alcohol would limit the further action of the drug; the same is true regarding ulcers, sloughs, and necrotic areas. The brilliant results that have been achieved by Phelps in treating deep suppurations about the hip, and suppuration of the middle ear, bid fair to make this one of the most important surgical means of dealing with suppuration.

PARALYTIC DEMENTIA AMONG JEWS.

Much has been written in relation to race and insanity, and no more curious chapter is to be found in medicine than that relating to the development of general paralysis in different races. The most striking circumstance in the development of general paralysis is the remarkable frequency of syphilis among those affected with the disease. Some writers even go so far as to say, "No syphilis, no general paralysis," in effect stating that the disease is essentially specific. The majority of observers do not agree with this view, believing that the disease may develop without a syphilitic infection, but recognizing that in more than 75 per cent of the cases there has been an antecedent luetic infection. A minority of students of the subject have contended earnestly for the view that other causes were of importance; that alcoholism, traumatism, and excessive mental strain and worry were also factors in the production of the disease, and that it might be due to other toxemias than syphilis, notably lead, which has caused a disease iden-

tical with the general paralysis which follows years after a syphilitic infection. The study of race in relation to this disease has thrown a flood of light upon its causation.

The Hawaiians, among whom syphilis is a household disease, are said to be free from general paralysis, no cases being observed among them. The negro race in the South, previous to the war, were practically exempt from this disease. But syphilis in slavery times was also infrequent.

Cecil F. Beadles, in the *Journal of Mental Science* for October, 1900, speaks of the abnormal predominance of general paralysis among insane Jews. In the great London asylums it is found that over 25 per cent of all male Jewish admissions are cases of this disease, while general paralysis forms only 13 per cent of the total admissions. Forty-one per cent of the male Jewish deaths were due to this disease, while in the county and borough asylums the whole number of deaths from this cause amounted to 26 per cent of the total male deaths.

The facts gathered by Dr. Beadles would naturally lead to the conclusion that if general paralysis is to be regarded as an epiphenomenon of syphilis, the latter disease must be far more common among Jews than among other races. But this is not generally believed; in fact, the imperfect data which are available point quite conclusively to the fact that syphilis is less common among Jews than it is among other races. The racial peculiarities and the development of general paralysis show that there are certain races in which syphilis is very common, and in which the disease is almost unknown. The disease is very common among Jews, among whom syphilis is less common than in other races. The argument is therefore irrefutable that there are other factors which play an important rôle in the development of this disease than simply luetic infection. Among these we must mention alcoholism, occupation, and traumatism.

UNITY IN STATE EXAMINATIONS.

There is considerable agitation in favor of having uniform requirements in the various States and a reciprocity among various examining boards, so that a physician registered to practice in one State can remove to another and register without passing another examination. Two elements are involved in this proposition, namely, uniformity of requirements and reciprocity. These are by no means essential to each other, though it is probable that the latter depends upon the former. There would be a distinct advan-

tage in having about the same laws governing the practice of medicine in different States, though it is probable that absolute uniformity cannot be obtained, because of different constitutional requirements and a varying spirit of legislation. There is not as much need of uniformity in medical practice acts as there is for some other legal regulations, notably that of divorce. Here, confusion is worst confounded; a person may find himself free in one State and a bigamist in another. Some years ago the laws regarding negotiable instruments in different States had become so complicated and difficult to interpret that an earnest effort was made by lawyers throughout the country to have uniform legislation enacted upon this subject. It has been successfully carried through, and we understand that up to date no less than fourteen States have adopted the proposed statute without amendment.

In any event, this movement to unify the legislation of the various States will have one most important outcome, namely, that it will secure thorough discussion of all phases of medical practice acts, and we may arrive at some unanimity as to how such acts should be drawn. As soon as one is proposed it at once meets with opposition from some members of the profession in its every feature, and it is months, or even years, before the sentiment in a State can be crystallized as to the probable effectuality and desirability of proposed legislation. A national committee or body having this matter in charge could initiate discussions from time to time until all the details of such legislation are carefully and accurately worked out. The recommendation of such a body would serve as a standard for proposed legislation in all of the States.

ABSTRACTS.

MEDICINE.

Diagnostic and Therapeutic Value of Lumbar Puncture.—

Alfred Hand, Jr., in the *American Journal of the Medical Sciences* for October, 1900, gives a critical summary of the literature. Quincke's original publication was made in 1891. Since then there has accumulated a vast amount of literature dealing with the removal of the cerebrospinal fluid through the subarachnoid space between the transverse portions of the lumbar vertebræ, or, as it is briefly expressed, lumbar puncture. Quincke first used the operation for the relief of excessive intracranial pressure. The chief therapeutic value of removal of the fluid is to relieve excessive cerebrospinal pressure in hydrocephalus, tumor, chlorosis, traumatism, the toxemias of lead, uremia, or infectious fevers. There is no absolute standard of cerebrospinal pressure, but it is estimated to be about twenty or twenty-five millimeters of mercury, with the patient in the sitting posture. The normal cerebrospinal fluid is a faintly alkaline, clear, colorless fluid, sterile, with a specific gravity of from 1001 to 1009, contains albumin and sugar, and is free from cells and other morphologic elements. In cerebrospinal fluid taken from children who have not meningitis, there exists constantly a glucose-like reducing substance. The amount of this is increased a little in grave pneumonic processes. In tuberculous meningitis the glucose is found in small quantity at the start and in small quantity at the end. In meningitis due to the meningococcus of Weichselbaum and to the diplococcus of Fraenkel, the absence of glucose in the exudate is constant. The amount of albumin in the fluid is from 0.2 part in 1000 to one part in 1000; 0.25 per thousand or above generally points to inflammation, though in rare cases two to four parts per thousand have been observed in tumor or apoplexy. The usual amount in meningitis is two or three parts per thousand, while in purulent meningitis, tumors, or hemorrhage it may be increased to seven, eight, or nine parts per thousand.

There is a conflict of opinion as to the value of turbidity in the fluid. Some writers say that it has very little diagnostic significance, while others assert that in meningitis it is always turbid. Fibrin is said to form on standing in all meningitic cases. In brain tumor cases no fibrin forms. In tumor, albumin and sugar are pres-

ent in normal amount, while in meningitis sugar is absent and albumin is increased.

Blood in the fluid is of varying significance. Its most frequent source is a puncture of the blood-vessel, the needle being pushed too far and injuring the veins that lie behind the bodies of the vertebræ. If the blood is in the first part of the liquid, the remainder being clear, traumatism by the needle is probably the source. An admixture of blood in the fluid is found in injuries of the head or spine, apoplexies, whether subdural or rupturing into the ventricles, and it is occasionally found in meningitis. The turbidity which is noted in tuberculous meningitis is due to small, round, mononuclear leucocytes; in purulent meningitis, polynuclear leucocytes are in the majority.

The bacteriological examination is of more importance than either its physical or chemical examination. The importance of negative results and the search for them depend largely upon the technique and skill of the examiner, so that as a rule positive conclusions can only be drawn from positive and never from negative results. Staphylococci, streptococci, pneumococci, and meningococci have been found. The typhoid bacillus has been noted in two cases. The tubercle bacillus has been found by some writers in a large proportion of cases of tuberculous meningitis, while others claim that this method is valueless from a diagnostic standpoint. Faulty technique is responsible for many of these failures. If the fluid is allowed to stand until there is a slight coagulation of the fibrin which sinks to the bottom of the liquid, and this is fished out, frequently the tubercle bacilli can be identified by the usual staining methods. The method, however, which gives best results is inoculation into guinea-pigs, the chief objection being that from four to six weeks must elapse before results are obtained. It is probably best to make both inoculations and stains.

Lumbar puncture is of value therapeutically in all cases where there is a marked increase in the cerebrospinal pressure. In tuberculous meningitis the operation is often followed by comparative comfort with a lessening of the headache. In epidemic cerebrospinal meningitis, puncture is almost always beneficial if practiced early and repeated often. A case is reported by Netter in which from the second to the thirty-seventh day eleven punctures were made at intervals of from two to five days, thirty to seventy cubic centimeters being drawn each time. The first puncture gave a turbid fluid with a deposit of pus; the second day's fluid contained a slight sediment; and that of the third day a very small fibrinous

flake. After this the fluid was perfectly clear. In cases of brain tumor there has been noted a temporary lessening of the headache and improvement in vision. In cases of tumor in adults a number of sudden deaths have been reported from lumbar puncture. In chronic hydrocephalus, lumbar puncture accomplishes as much as ventricular aspiration, the value of both procedures being very doubtful.

Suddenly Developing Obscure Non-traumatic Tumors of the Lower Abdomen.—

M. A. Richardson, in the *Boston Medical and Surgical Journal* of October 4, 1900, has an interesting study from a clinical standpoint on tumors such as are described in the heading of this abstract. He says that in the majority of cases that demand early surgical intervention, which must be prompt to be successful, most of such rapidly developing tumors are very obscure in their origin, and the highest diagnostic skill often fails in determining their exact nature. The paper is based upon observations during the last four months, and in each case the patient's life was saved by the operation; in only one was a correct diagnosis made before exploration. By sudden and obscure tumors he understands those which are so small that they escape observation one day, and so large that they cannot be overlooked the next. A case is described in which a patient was supposed to be suffering from nephritic colic. The patient was examined under ether, and nothing could be detected in the pelvis. Two days later there was sharp pain with collapse, and she was again carefully examined, but nothing could be detected. Three weeks later there were symptoms of acute appendicitis. Examination at this time showed a large ovarian tumor with a twisted pedicle, filling the pelvis as far as the umbilicus. The case is explained by the cyst, which was originally very flaccid, and in this way escaped detection, and the collapse marked an occlusion of the pedicle and a hemorrhage into the tumor.

Attention is called to the frequency with which an overdistended bladder is sometimes mistaken for a tumor, and from this the writer argues that catheterization should be an invariable rule before all operations in all cases of abdominal tumor, even when the history of the case shows that there has been voluntary and uninterrupted micturition preceding the time of operation. The bladder, both in men and women, may be enormously distended without giving rise to a single symptom or even inconvenience.

Idiopathic dilatation of the colon, so-called phantom tumor, should not be spoken of as a suddenly appearing tumor, but rather as a suddenly disappearing one.

A remarkable case is that of an enormously dilated stomach which formed a rapidly developing tumor in the lower abdomen. The symmetry and distention of the organ was such as to lead to the suggestion that it might be a distended bladder. Catheterization showed that this was not the case, and upon opening the abdomen the true condition was found. As the stomach could not be emptied by the use of the stomach tube, an effort was made to establish an opening between the stomach and jejunum, which was not successful in relieving the symptoms.

The most common tumor which suddenly attains considerable dimensions is the ovarian tumor with twisted pedicle. The obstructed venous supply causes engorgement of the tumor and sometimes hemorrhage. The latter is principally responsible for the shock which sometimes accompanies this condition. A rupture and hemorrhage may take place without a twist of the pedicle. The diagnosis in cases in which tumor has been known to exist is usually not difficult, but it is very different when the flaccidity of a tumor wall has prevented its recognition. The practical deductions in such cases are that not too much time should be wasted in an attempt at diagnosis, but sudden throbbing and severe pain in the lower abdomen, followed by symptoms of shock with tumor, mean a serious lesion and demand exploration. With such symptoms the surgeon may find an extra-uterine pregnancy, an ovarian torsion, an acute salpingitis, or even a perforated appendix.

Murmurs of Anemia.—

Robert Maguire, in the *Clinical Journal* of September 26, 1900, has a very interesting clinical lecture on anemic murmurs. Their pathology is interesting, and they are of diagnostic and prognostic importance, as they are often mistaken for murmurs of organic origin. Chlorosis furnishes the best opportunities for studying these murmurs. They may be heard: (1) over the veins; (2) over the origin of the pulmonary artery; (3) over the origin of the aorta; (4) over the systemic arteries; (5) at the apex of the heart. The most common venous murmur is that heard at the root of the neck, immediately over the termination of the internal jugular vein. As a rule such murmurs are continuous and are distinctly musical, though the tone is variable; the musical qualities of these murmurs are more distinct than any other sound heard in connection

with the circulatory apparatus. The venous murmur is, as a rule, best heard on the right side of the neck. Sometimes it is only heard in the upright position, and is commonly louder during inspiration. The murmur is loudest during diastole, and it may be heard over the sternum, in such cases simulating aortic regurgitation. In such cases other signs of aortic regurgitation are absent; the murmur is never transmitted downward, and it disappears when the breath is held.

Another murmur is that heard at the origin of the pulmonary artery, systolic in time, and always blowing in character. It is loudest at the junction of the third left costal cartilage of the sternum, and is carried upward and toward the left. It is most distinct when the patient is lying down, and is most pronounced during expiration.

Another anemic murmur is systolic in rhythm, but is never so loud as that heard over the pulmonary artery. It is blowing in character, does not interfere with the sounds of the heart, and is heard best at the junction of the second right costal cartilage over the sternum and is transmitted upward and toward the right.

Functional murmurs are heard in the systemic arteries, and are similar to those heard at the root of the pulmonary artery and aorta. These murmurs are only heard in the large arteries and are most frequent over the subclavian, but some may be noted in the carotids and in the femoral arteries, and not infrequently over the abdominal aorta. Their diagnostic importance relates chiefly to the ease with which they may be mistaken for aneurism. Sometimes the pulsation of the abdominal aorta is very pronounced, and associated with it is a murmur which would readily lead to this error.

The murmurs of the apex are of two sorts. Both are systolic in rhythm; one is heard slightly inside the apex of the heart and is transmitted upward, and is never associated with cardiac dilatation. This murmur is never transmitted to the left. The pulmonary second sound is not accentuated or reduplicated. The second murmur is loudest at the apex, is conducted to the left through the axillary region, and is usually associated with definite signs of ventricular dilatation. Associated with it is accentuation of the pulmonary second sound, which is often reduplicated. The second of these murmurs is undoubtedly caused by mitral regurgitation caused by a relaxation of the muscular tissue of the left ventricle. The competency of the mitral valve depends upon the functional activity of the heart muscle.

These murmurs are of clinical value in estimating the amount of

anemia; the latter should not be judged from the quantity of red blood corpuscles, as they give very little idea of the patient's condition. There may be only a slight degree of corpuscular insufficiency, and yet a considerable amount of laxity of tissue. Both are evidenced by the presence of murmurs.

Report of Two Cases in which the Signs of Mitral Stenosis Disappeared as Compensation was Established.—

M. H. Fussell and J. D. Steele, in the *University Medical Magazine* for October, 1900, report the case of a man 22 years of age, who came under observation in February, 1900. Previous illness and venereal disease were denied. The heart symptoms developed after excessive bicycle riding in 1899. After a prolonged ride he had an attack of palpitation, dyspnea, cough, and vertigo. From that time he was unable to ride, and his examination the following February showed marked systolic pulsation in the veins of the neck. The impulse was in the fifth interspace, half an inch outside the midclavicular line. It was diffuse and heaving in character. There was also pulsation in the third, fourth, and fifth interspaces to the right and left of the sternum. The impulses in the third and fourth interspaces occurred distinctly earlier in the period of the heart's cycle than the impulse at the apex, and were evidently due to auricular dilatation. Palpation revealed a distinct presystolic thrill over the apex. Percussion showed cardiac dulness as high as the second interspace. The left border was one-half inch outside of the midclavicular line at the level of the fourth, fifth, and sixth ribs; the right border extended one inch to the right of the sternum at the level of the fourth, fifth, and sixth ribs. A rough presystolic murmur and a softer systolic murmur were heard at the apex; the latter was transmitted to the axilla. There was a moderately abrupt first sound. The second sound was accentuated and at times reduplicated in the pulmonary area. At the ensiform cartilage a blowing soft systolic murmur was heard which was transmitted upward and to the left a distance of about one and one-half inches. The pulse was of high tension, small, and weak. On May 1 the thrill had entirely gone, and later there was a complete disappearance of the presystolic and systolic murmurs, though the second pulmonic sound remained accentuated.

The second case was that of a boy of 19, who two years after an attack of rheumatism overexerted himself while bathing and brought on an attack of hematemesis and cardiac weakness. He recovered completely and was well for five years, until after a period

of active athletic exercise he was again subjected to severe strain. The physical signs were enlargement of the heart to the left, a distinct presystolic murmur at the apex with a moderate systolic shock, and accentuation of the pulmonic sound. Under complete rest and treatment, in two months' time his heart seemed to have fully regained its strength, the signs of dilatation had disappeared, and the presystolic murmur had lessened to such a degree that it could hardly be recognized. Both cases presented typical signs of mitral stenosis.

Postdiphtheritic Paralysis.—

B. E. Meyers, in *The Lancet* of September 22, 1900, gives an analysis of the diphtheria cases admitted to the Park Hospital during 1899. There were 131 cases of diphtheria in the wards, and there were 275 distinct diphtheritic paralyses and pareses. One case of diphtheria out of every five patients suffered from some paralytic trouble. The proportion of males and females affected was about the same. Paralysis was found to be relatively most frequent in cases between three and eight years.

By "cardiac paralysis" the author understands those cases harassed by disturbance in the heart's action, shown often by extreme weakness, vomiting, or blueness of the skin. The heart is not infrequently dilated, irregular, intermittent, or very rapid. There is marked alteration in the heart sounds. Many cases present nearly all of these symptoms some time after the onset of the attack. There were eighty deaths among the cases that suffered from paralysis, and sixty-four of these had cardiac paralysis, leaving only sixteen deaths due to other causes. The average day upon which the cardiac paralysis appeared was the seventh. In one instance the symptom appeared on the second day of the illness, and in another it was delayed until the thirty-sixth day. The average duration of life after cardiac paralysis noted in the cases which died was four days. The extremes were one day and fourteen days. The temperature chart is quite significant in cases which show cardiac paralysis. A temperature ranging from 100° to 101°, which on the fifth or sixth day drops to 97° and keeps near this point for several days, is apt to be accompanied by very unfavorable cardiac symptoms. A very large proportion of the cardiac cases presented early a marked enlargement of the cervical glands. The amount of membrane did not seem to be appreciably related with the cardiac symptoms, some presenting very grave circulatory disturbances with slight exudate, and others had extensive membranes presenting no cardiac complications.

There were twenty-one cases of diaphragmatic paresis and paralysis, of which eleven terminated fatally and ten recovered.

There were 110 cases where the palate alone was affected, which equaled 40 per cent of the total number of cases of various kinds of paralysis and paresis for the year. As to the day of onset, the minimum time was the eighth day and the maximum the fifty-fifth day, the average being the twenty-seventh day. There were fifty-six cases in which the palate was paralyzed in connection with other muscles, the largest number being associated with external rectus, and next to that the diaphragm.

Asthma.—

Walter A. Wells, in the *New York Medical Journal* of October 13–20, 1900, has an extensive paper upon the present state of our knowledge concerning the cause, nature, and treatment of asthma. He comes to the following conclusions: (1) Asthma has so many points of resemblance with migraine, angina pectoris, and epilepsy that the suspicion may be entertained that they all have a similar pathology. (2) Of the theories that have been advanced to explain the origin of the asthmatic paroxysm, no one so well harmonizes all the facts as the vasomotor theory; and this only when we admit that it is essentially one of arterial contraction rather than dilatation. (3) There is always present in asthma a morbid constitutional state of the sympathetic nervous system, giving rise to a certain nutritional aberration, whose most salient feature is the increase of uric acid and the urates. (4) Asthma occurs as a reflex neurosis from diseases of different organs, but oftenest from those directly supplied by branches of the vagus nerve. The nasal trouble, which is the most frequent reflex cause, is not necessarily an obstruction, and may be very inconspicuous and difficult to detect. (5) Nearly all cases of asthma show evidences of a pronounced psychic element, as in the curious variety of exciting causes of the attack, in the capriciousness of its course and behavior, and its dependence upon emotional states, suggestion, etc. (6) In the treatment of the paroxysm of asthma, a strict individualization needs to be observed. The best remedies are those which overcome arterial spasm, such as morphine, nitroglycerin, atropine, and chloral. (7) Treatment in the intervals of the attacks must be directed, in the first place, to the removal of the cause, and secondly, to the institution of sound hygienic prophylactic measures in relation to the mind, diet, air, exercise, etc. (8) Medicinal treatment is addressed to improving the constitutional state, for which the best remedies are piperazine, the iodides, the alkalies, and general tonic treatment.

Primary Splenomegaly.—

David Bovaird, in the *American Journal of the Medical Sciences* for October, 1900, says that endothelial hyperplasia of the spleen represents a primary affection of the organ which has hitherto been unrecognized. Two complete reports are to be found in the literature, and in both of these it can be clearly shown that the pathological findings were wrongly interpreted. The two cases which he reports were kept under observation for nearly three years, during which time no definite conclusion as to the nature of the affection was reached. It was only when autopsy furnished in one of the cases an opportunity for careful microscopic examination that the nature of the cases was determined. There was apparently an endothelioma of the spleen, with metastases in the lymph nodes and liver. The huge spleen was made up in part of areas of connective tissue, in part of areas in which the pulp spaces of the spleen were filled with endothelial cells. The normal cells of the splenic pulp had disappeared. A similar process was noted in the lymph cells, and in the liver were areas of perilobular connective tissue in which there was an unusual development of endothelial cells in the lymph spaces.

The symptomatology of the affection is enlargement of the spleen, beginning in childhood between the second and seventh years, the increase in size being slow and progressive. Secondary to the splenic enlargement is an increase in the size of the liver, which is considerable, but never reaches the degree that is noted in the spleen. There is a simple anemia, and the changes observed in the blood are those associated with any chronic enlargement of the spleen. There is softening of the gums with oozing of blood and repeated epistaxis. Cutaneous hemorrhage and icterus were present in Gaucher's case, but not in the writer's. The symptoms due to the mechanical effect of an enlarged spleen are always present, such as pain in the abdomen, disturbance of the stomach and bowels, dyspnea, dysuria, and cramps in the legs.

Shortening the Period of Contagion in Diphtheria.—

William Ewart, in the *Edinburgh Medical Journal* for September, 1900, says that there has been a very marked decrease in the death-rate of diphtheria since the introduction of antitoxin, but there has been no decrease in the frequency of the disease. He says there is a tendency of the bacillus to pass from mouth to mouth, and the great danger of its spread through schools is due to the persistence of the bacillus for a long time after apparent recovery. Attention may be

paid to the clothing, the hair, and the skin, but unless the mouth, throat, tonsils, and nasopharynx are systematically treated, individuals who have had the disease are dangerous to those with whom they are brought in contact. It may be a good rule to systematically look for the bacillus and to isolate all patients in whom it is found, but a less passive policy might get rid of it. He urges that the nasal cavity and the nasopharynx in all the cases of diphtheria, scarlet fever, influenza, whooping-cough, and mumps should be carefully disinfected. Such cleansiugs should be begun early in the attack and carried on perseveringly during the period of convalescence. In his practice all cases of diphtheria receive local applications to the nose and nasopharynx of carbolized oil daily during their stay in hospital. It not only relieves local discomfort, but disinfects the entire mucous membrane. If this or some more efficient means were adopted, it is not unlikely that the unfortunate occurrence of late relapses or of infection by apparently healthy convalescents might be considerably reduced, as well as the period of isolation. It is possible that the late sequelæ of diphtheria and influenza may be due to late infections, which would be prevented by removing the infecting organisms. Systematic disinfection should include some effort to cleanse the recesses of the tonsils. For this purpose massage of the tonsils is important as a part of the nasopharyngeal disinfection.

Renal Casts Without Albuminuria.—

C. F. Martin and F. B. Jones, in the *Philadelphia Medical Journal* of September 8, 1900, have studied the frequency with which renal casts are present in the urine without albuminuria. Such an association is recognized by most writers. Eichhorst and Senator say that casts are very uncommon when albumin cannot also be found. Purdy says that he has never met with a case of casts in the urine when albumin could not be discovered at some period during the course of the disease. Von Jaksch says that hyaline casts in the urine are non-pathological, but that other casts are extremely uncommon without albumin. The authors' studies were made in the Royal Victoria Hospital of Montreal, and they have shown that in a variety of conditions casts have been found when no recognizable amount of albumin was present. In examining for albumin, heat and the potassium ferrocyanide tests were employed. In a few cases Heller's cold nitric acid test, as employed by Ruttan, was used. Examinations were made in urine of twenty-four hours and of occasional specimens. In all some eighty cases were examined,

in forty-six of which hyaline casts were found. In nine of these albumin was also present at some time during the illness. In every one of the forty-six cases hyaline casts were found not associated with albumin in one or more specimens of urine. In thirty granular casts were found, and in eight epithelial.

Under such conditions it seems difficult to estimate the true importance of casts in the urine. Their occasional presence does not indicate a grave prognosis in the absence of other significant symptoms. Such a rule applies at least to the hyaline and granular casts. Epithelial casts, being much less common, are doubtless of more serious import.

Achondroplasia.—

Pierre Marie, in *La Presse Médicale* of July 14, 1900, gives two examples of this comparatively rare affection, which was first described by Parrot in 1878, and is sometimes spoken of as fetal rickets. He gives a report of two additional cases and calls attention to a certain disproportion of the different parts of the skeleton. In both of the cases the measurements were carefully compared with those of a normal child of about the same height, but very much younger than the cases described. One of his cases was 42 years old, the other 18. The older one was slightly taller than a boy of eight years, and the other was somewhat shorter. This diminution in height was due to extremely short extremities; the trunk of each of these dwarfs was longer than that of the normal boy of eight years, but the legs were very much shorter. This shrinking of the lower extremities is largely due to a very short femur. The arm was much shortened, the lessening in its length being largely confined to the humerus, the forearm being relatively very long. As to the nature of this affection, the writer is inclined to the view that intra-uterine rickets has nothing to do with its development, but that it is a dystrophy of the primordial cartilages brought about by general causes.

SURGERY.

Difficulties of Laryngeal Intubation.—

E. Escat, in *La Presse Médicale* of October 10, 1900, says that it is undeniable that intubation may present mechanical difficulties almost insurmountable. There are certain difficulties which can be

overcome by certain maneuvers. The author rejects certain theoretical views as to the difficulty in introducing the tube. One of these is extreme congenital narrowness of the larynx. He says it is scarcely possible that the larynx of a child of four years can be so narrow that it is impossible to pass a tube of a size sufficient for a nursling. Spasm is also rejected as a cause of difficulty in passing

FIG. 1.—Semischematic representation of first movement.

the tube, particularly when inspiration is chosen as the moment when the tube is engaged in the larynx. There is a possibility that acute inflammatory edema of the larynx may be sufficient to cause some difficulty in passing the tube, but it is scarcely possible that it should cause an absolute stenosis. A false direction to the tube furnishes the vast majority of cases of difficulty in its introduction. By an improper direction the tube may impinge upon some portion of the larynx which prevents its further passage.

In very early infancy it has been demonstrated that the posterior surface of the cricoid has a marked inclination from above downward and before forward. This persists until about the third year, and if in this period an attempt is made to introduce the tube and the handle of the carrier is downward, the tube may impinge upon the curved posterior surface of the cricoid and consequently not enter the glottis. A second false direction is an engagement of the end of the tube in the space between the thyroid and cricoid anterior to the vocal cords. This improper direction is overcome by direct pressure with the thumb on the space between the cricoid and thyroid cartilages in front, the larynx being steadied by the fingers of the left hand upon the side, while the carrier is held in the right hand, directly in the middle line.

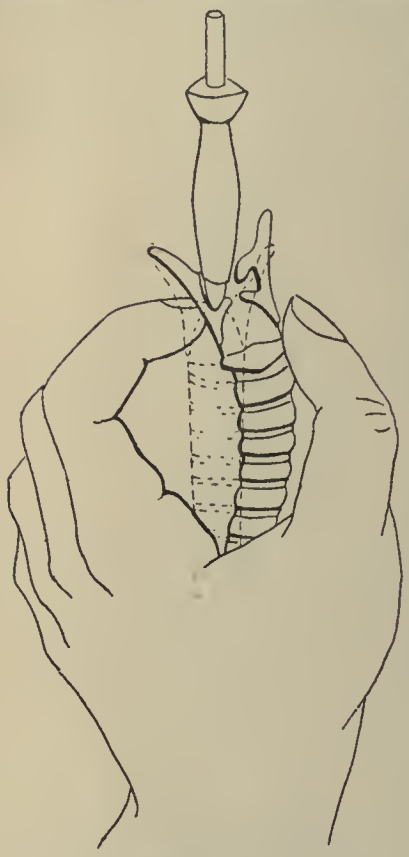

FIG. 2.—Semischematic representation of the second movement.

A third false direction consists of an engagement of the tube in the ventricle of the larynx. This difficulty is due to an inclination of the tube either to the right or to the left of the middle line. In overcoming this the larynx is grasped between the thumb and index-finger. This is to correct the lateral deviation of the larynx and bring the opeuing of the glottis directly in line with the tube.

Surgical Treatment of Trigeminal Neuralgia.—

Victor Horsley, in the *Practitioner* for September, 1900, gives the results of twenty-one operations for removal of the Gasserian ganglion for neuralgia. He refers only to cases that were true tic-douloureaux, excluding hysterical and functional neuralgias and those from overwork. The medical treatment of these cases is, at the best, only palliative. For a time it may overcome the pain, but

it invariably returns. The disease begins in the small peripheral branches in the face. The majority of patients tell us that pain first arose from exposure to cold. It is an ascending neuritis which spreads from one ascending ganglion to the other. The ganglion is to be looked upon as the seat of the disease, at least ultimately. For these reasons the removal of the peripheral nerve is only of temporary service. This is affirmed by the cases in which this has been done; the return of the pain being remarkably constant as to time, namely, from two to three years. This result is due to a restoration of the continuity of the nerve.

The best method of removing the ganglion is that known as the Krause-Hartley. It is the same as that employed by MacEwen, with the very important exception that the dura mater is not opened. The operation recommended by Krause-Hartley takes one and one-half hours to perform, and is difficult, involving depression of the temporosphenoidal lobe to a severe degree, yet it is rarely attended with shock of a dangerous character. The chief difficulty in approachiug the ganglion from the outer side is the hemorrhage from the small veins which empty into the lateral sinuses. A small branch from the basilar artery is also divided. The hemorrhages from these sources can usually be controlled by long probes, but it adds greatly to the danger of the operation. The sensory root is severed last, being drawn away from its attachment to the pons. There is danger in removing the ganglion that the ophthalmic part of the sensory root may be left. There is very little risk to life from the operation itself. Out of twenty-one operations, he has had only two deaths. In one of these death occurred two months after operation, and the writer is uncertain whether it was due to infection from the wound or to a syphilitic ulceration of the nose. Another patient was a woman 80 years of age upon whom the operation was successfully performed, but two hours later she had a hemorrhage into the pons and died in two days. The hemorrhage was five millimeters in diameter and was caused by the separation of the sensory root. He has operated on four patients over 80 years of age.

The field of operation should be thoroughly cleansed and should include the antisepticizing of the eye and ear upon the side of operation. There is always a certain danger to the eye, but the writer has only lost one eye in the twenty-one cases, and that was in an early operation before he adopted the precautions which he now employs. The eye upon the side of the operation is carefully closed by stitching the lids together. These stitches are removed, and the eye is afterward carefully protected by a rubber dressing so that none of

the antiseptic washes can get into the eye and irritate the conjunctiva. Not one of these cases had a recurrence, an experience which corresponds with that of Krause, whose first case dates from 1892.

Phelps's Operation for Hernia.—

A. M. Phelps, in the *Medical Record* of September 22, 1900, says that since 1892 he has operated upon 216 cases of hernia; forty-six were relapses after Bassini's operation, and fifty-one were after other operations, chiefly that of McBurney. Since that year he has closed all abdominal wounds with a silver wire. A certain amount of scar tissue must result in the healing of any abdominal wound, and the stretching of these leads to the hernias which follow; it matters not whether there is an aseptic healing of the wound or not. To overcome this tendency of scar tissue to stretch, he reenforces the closure by silver wire. In extremely thin abdominal walls, in addition to this, a mattress of loops of silver wire is introduced between the muscular coats of the abdominal wall. The wire becomes encysted and remains during the life of the patient. The encysting of the wire is especially favored by the continuous suture which he employs. Relapses in oblique hernia usually take place in the internal abdominal ring, and in other forms of hernia at the external. A grave error of operation is the ligation of the sac. He cuts off the sac, stitching up the peritoneum and transversalis fascia with a continued silver wire suture. Over the transversalis and peritoneum and the deeper muscles a mattress of fine wire is placed and the deep layer of muscles stitched over it. If a very large opening is to be closed and the muscular walls are very thin, a second mattress is placed between the deep and superficial muscles.

This plan of operating, which Phelps adopted in 1892, was given to the profession two years later in what he regarded as a preliminary communication. He is now prepared to urge the profession to adopt the operation. The results in the cases in which Bassini's operation was performed and relapsed are especially interesting. The primary operations had been performed by some of the leading operators in some of the best hospitals in the country. The method which he employs in operating he thinks gives absolute security against relapse, and the mortality of the operation is practically *nil*. The sac in all cases of hernia should be dealt with by radical methods, and a hernia operation should be converted into a small laparotomy to secure the best possible chances of success. The only way to secure a strong abdominal wall is by favoring the deposit of newly formed tissue and the prevention of

stretching by a material which will not be absorbed and yet at the same time be elastic. He has had but sixteen cases of infection in 216 cases. Where this accident takes place, the wound is to be laid open, carefully curetted, and cleaned out by pure carbolic acid followed by alcohol.

The Best Method of Collecting Urine from the Ureters for Diagnostic Purposes.—

M. L. Harris, in the *Annals of Surgery* for August, 1900, says a separate collection of the urine from each ureter is of acknowledged diagnostic importance. Some advocate ureteral catheterization, and others rely upon the urine segregator devised by himself. Both have their advantages and disadvantages; in certain cases one method is indicated, while in others another is indicated. In ureteral catheterization, slight hemorrhage is produced in 50 per cent of the cases by the introduction of the catheter; the same is true of the segregator, which may cause hemorrhage from the bladder wall, thus contaminating the specimen.. It is the exception, however, for this to occur when the bladder is healthy. The presence of blood in the specimen will give rise to no confusion where the urine passed by the patient naturally is free from blood, as in this way it will be learned that the blood has come from the instrumentation. When a small quantity of blood is present in the voided urine and it is desirable to learn its source, much confusion may result. In cases in which the bladder is inflamed and the segregator is liable to cause bleeding, he has found the use of a fresh solution of suprarenal extract of value. The introduction of 60 cubic centimeters of the freshly prepared solution, followed by 15 cubic centimeters of 2-per-cent solution of cocaine, allows of considerable manipulation of the inflamed bladder without hemorrhage. A distinct advantage of the segregator over the ureteral catheter is that none of the urine is lost. In a mere qualitative examination this is of no importance, but is of distinct value in estimating the functional capacity of the kidney. A very decided advantage of the segregator over the catheter is the freedom from danger of infecting the kidneys; this is considerable, and in some cases the ureters should not be catheterized at all. In some cases the segregator fails. In the writer's hands it has failed in fungus growth of the bladder, in some cases of prostatic enlargement, and in cases where the bladder was contracted so as to prevent turning of the instrument. Spasm sometimes interferes with the use of the segregator, but this is readily overcome by washing out the bowel, followed by the introduction of

a mixture of one drachm of antipyrin and fifteen minims tincture of opium in ninety cubic centimeters of water. This mixture will in thirty minutes anesthetize the base of the bladder. During this time the cocaine and suprarenal extract may be employed within the bladder, this treatment admitting of extensive manipulation of an inflamed and diseased viscus.

Treatment of Tuberculous and Purulent Joints.—

A. M. Phelps, in the *New York Medical Journal*, September 1–15, 1900, gives a report of seventy cases which have been treated by him with applications of pure carbolic acid, followed by alcohol and the introduction of large glass specula extending to the suppurating focus. The writer condemns in unqualified terms the occasional aspiration of a joint, or any other procedure that is not radical. He maintains that every suppurating joint should be intelligently explored. Until within the last two years it was very difficult to operate on such joints and prevent extensive infection, but this is now possible with the use of pure carbolic acid. In all cases the abscess cavity is laid open, the opening into the capsule is found and enlarged, and the joint explored. If there is extensive bone disease, the capsule is freely divided for one-half or two-thirds of its circumference. The head of the bone is pulled out from the socket, the joint curetted and irrigated with bichloride solution 1 to 1000. The joint is then filled with pure carbolic acid, which is allowed to remain one minute, after which the joint is thoroughly washed with pure alcohol, and finally the latter is washed away with a two-per-cent solution of carbolic acid. The wound is then drained with the largest glass tube that can be introduced. This tube not only admits of perfect drainage, but it permits the surgeon to see what is taking place in the joint. If further suppuration takes place, it can be treated through the drainage-tube. The tubes vary in size from one-fourth inch to two inches in diameter. They are of varying lengths to admit of their extending from the surface to the deepest portion of the joint. The tube is worn until granulations fill in from the bottom. In seventy cases treated, the most brilliant results are claimed.

The writer says that he would in these cases in former years have performed at least fifty excisions, while in the series of seventy cases but twenty were required. In all the other cases the joints have been freely opened and the necrosed bone and cartilage removed. In all the cases requiring excisions or extensive bone operations, the patients were discharged from the hospital in three weeks, wearing hip-braces or using crutches.

The Treatment of the Sac in Large Herniæ.—

M. L. Harris, in the *Western Medical Recorder*, July-August, 1900, says that by very large herniæ are meant those that are the size of a child's head or larger. The dangers in these cases are very great, and large herniæ form a class by themselves. In some cases the hernia may be so large and so much of the abdominal contents be contained in it that the abdomen is contracted so that it is difficult for it to contain the contents of the hernial sac after it is reduced. In small herniæ the sac is easily removed, but in the large ones its walls are much thickened and its attachments to the scrotal and other tissues intimate. Its vascular supply is also much increased, which produces much oozing when an attempt is made to remove the sac. The circulation of the scrotal tissues may be so interfered with as to cause sloughing of the cord or scrotum. A patient that he describes had a hernia sixty-four centimeters in circumference. It contained nearly all the small intestine, the colon, and the omentum. For eight years it had been irreducible. The sac was removed with great difficulty and the rings were united by Bassini's method. He developed a temperature with sloughing of the scrotum and gangrene of the testicle. A free incision in the scrotal tissues with removal of the testicle and thorough drainage saved the patient's life.

Another very large hernia was eighty-one centimeters in circumference and forty centimeters in length. The patient was kept in bed upon a light diet for a period of two weeks, and equable pressure was exercised by Martin's rubber bandage. This reduced the hernia in size about one-fourth. At the operation the sac was cut across and the large opening in the abdomen closed by a double row of catgut sutures. Following the operation the sac accumulated considerable fluid, and it was thought that it would be necessary to perform another operation for the removal of the sac. At the end of a month all fluid had disappeared, and the parts had become so contracted that further interference was unnecessary.

In another patient the hernia measured sixty centimeters in circumference; the sac was left and the abdomen closed by the usual method. The sac became infiltrated with fluid and was believed to be septic, but the cause of the temperature was later found to be due to a pneumonia. Ten days after operation convalescence was fully established and the sac and scrotum had diminished markedly in size and gave no further trouble.

Of the three cases, in the one in which the sac was removed there was sloughing of the testicle with thrombosis and hemorrhage.

The other two, in which the sac was left, had no subsequent trouble. This method of dealing with large herniæ saves much time during operation and avoids the danger of sloughing of the scrotal tissue, and there is much less danger of sepsis.

Radical Cure of Hernia.—

J. C. Warren, in the *Boston Medical and Surgical Journal* of September 13, 1900, says that the operation for the radical cure of hernia has become part of the hospital physician's regular work. Old traditions prevail to some extent, and most patients, if they are able to buy a truss, obtain one and wear it with more or less discomfort. In about two per cent of the cases the truss is followed by a radical cure. In a large proportion, particularly in laboring men, the truss slips, and the hernia continues to enlarge until it reaches a disabling size. In the opinion of the writer, the time has come for even the most conservative surgeons to revise their opinion of the radical operation. He has operated on ninety-eight cases in the period between 1888 and 1900. Of these, fifteen cases furnished definite information of their subsequent condition, and a careful analysis was made of the whole number as to the relative merits of animal tendon, silk, and catgut. In 17 per cent of the cases where silk sutures were used the wounds were septic, while with catgut septic conditions were found in 40 per cent. The operation employed in the majority of cases was that of Bassini, though MacEwen's was given a test in the earlier cases. Better results were obtained with silk than with catgut, but the dangers with all suture material have been greatly lessened by improvement in aseptic technique. It is highly probable that the highest grades of silk are as easily absorbed as chromicized catgut.

Of the cases where definite information could be obtained as to recurrence, it was found that seven relapses had taken place out of forty-five cases of inguinal hernia. There were three cases of femoral hernia with no recurrence; two cases of ventral hernia with no recurrence; eight cases of umbilical hernia with three recurrences. The cases prior to 1895 gave a proportion of 69 per cent of cures, and those of the last five years gave a proportion of 92 per cent, showing the improved technique had an important influence upon the result. In septic wounds there were 35 per cent of recurrences, but in clean wounds recurrence was only noted in 7.6 per cent. In cases sewed with silk, the recurrence amounted to 9 per cent, but in cases in which catgut was used it was as high as 30 per cent. In the inguinal cases alone there were eighteen catgut operations with six recurrences, while in twenty-three operations in

which silk alone was used there was no recurrence. In the majority of cases recurrence takes place, if at all, within one year after the operation.

Total Extirpation of the Ureter.—

Willy Meyer, in the *Medical News* of September 22, 1900, says that this operation may be done simultaneously with nephrectomy, or later. The primary operation adds considerably to the risk which the patient runs, it necessitating a longer anesthesia and an enlargement of the wound. Only part of the ureter is removed in cases of malignant tumor of the kidney. If the entire length of the ureter has become involved, the case is usually beyond the reach of surgical intervention. In fourteen cases of renal tuberculosis, the ureter was left in all cases, the proximal part of the ureter being dissected as far down as could reasonably be done. In one of these cases, eight months after the nephrectomy the lumbar portion of the wound opened, and it became necessary to remove the upper portion of the ureter. It is suggested that the cystoscope may furnish valuable indications as to the activity of a tuberculous process in the ureter. If ulceration is observed around the ureters after a nephrectomy, it may be taken as conclusive that the tubercular process has little tendency to heal. Ureterectomy may be required in impacted stone and in stricture. In one case the left kidney was removed, and fifteen months later the patient complained of pain in both lumbar regions. Separate collections of urine on two occasions showed, with the Harris segregator, that the left ureter was discharging purulent urine. This was confirmed by washing out the bladder and then throwing some clear fluid into it and massaging along the left ureter. This gave the same results as the examination with the Harris instrument. On operation the ureter was found to be nearly a centimeter in diameter, and the contained fluid in this case was found to be due to a ureteral calculus which lodged near the opening and caused the patient's ill health for five years, and a nephrectomy. After the removal of the ureter the patient had no further trouble.

THERAPEUTICS.

Notes on Atropine.—

R. D. Rudolf, in the *Montreal Medical Journal* for October, 1900, emphasizes the important fact that this substance is the most powerful of all internal stimulants. It directly inhibits the action of the vagus nerve upon the heart and has a direct stimulating action upon

the organ, thus raising the blood-pressure. It stimulates respiration. If, however, a poisonous dose is given, a directly opposite effect is produced, the heart as well as pressure fails, and there is dilatation of the blood-vessels, the animal dying from circulatory failure. The dose of atropine varies from $\frac{1}{100}$ to $\frac{1}{60}$ of a grain; $\frac{1}{20}$ grain has been spoken of as a maximum single dose, but this is certainly very large, unless it is used as an antidote to morphine. Very unpleasant symptoms have been noted from $\frac{1}{48}$ of a grain. Half a grain has caused death, but three grains has been recovered from. Rabbits and horses are almost immune to atropine, but carnivora are very susceptible to the drug. Atropine is valuable in cases of syncope, collapse, and sudden cardiac failure. Its more prolonged use in threatened cardiac failure has been chiefly tried in pneumonia, and for this purpose it may be used for several days. In patients of advanced years, and in those of valvular diseases of the heart, the effect of atropine in accelerating the heart's action has been very much less; hence the drug is of little value in failures of compensation.

Atropine is of distinct advantage in anesthesia. Notwithstanding the controversy between the Glasgow Chloroform Commission and the Hyderabad Commission, the writer is of the opinion that the drug is distinctly of value in warding off the dangerous effects of chloroform. For this purpose the dose should be small—about $\frac{1}{150}$ of a grain. Experiments upon animals show that atropine is of value when danger threatens during chloroform administration. He describes one experiment upon a dog in which chloroform had been given until the animal ceased to struggle. At this time respiration suddenly became shallow and ceased. Artificial respiration was used without success. The heart could not be heard on auscultation. One-fiftieth of a grain of atropine was injected under the skin, and rapid massage was performed over the site of the injection, artificial respiration being kept up. In about one minute the heart was felt to be beating rapidly. Artificial respiration was then discontinued, and soon rapid breathing commenced in a shallow manner, and the animal recovered. H. C. Wood in 1890 stated that the results of injections of atropine upon dogs poisoned with chloroform were negative. The amount which he employed was three grains of atropine, an enormous dose, which might well have acted as a sedative rather than a stimulant.

The Surgical Treatment of Dropsy.—

M. L. H. S. Menko, in the *Wiener Klinische Rundschau* of October 7, 1900, says there are numerous cases in which diuretics and

diaphoretics do not relieve the overloaded cellular tissue in dropsy. In these cases surgical measures are to be employed. They have been used from time immemorial, but of late have not been employed as much as they should be. The case of a patient is mentioned who had suffered from great edema due to heart disease. He accidentally wounded himself, stepping upon a projecting tack in the carpet. Within a few days the excessive fluid in the cellular tissue had all been discharged through the opening. A curious fact in the surgical treatment of dropsy is that the danger of infection is much greater where the edema is due to cardiac disease than where it follows disease of the kidneys. Erysipelas, gangrene, and phlegmon are not infrequent complications in dropsy. The uric acid contained in the serum, under the action of the atmosphere, frequently decomposes with the development of ammonia. This exercises a corrosive action upon the skin and forms a favorable culture medium. Two surgical methods may be employed—drainage, or simple incision. The latter method is employed in patients in whom respiration is difficult and who cannot be kept in bed. Incisions in the skin heal very slowly in some cases, while in others they close up almost as soon as made, and in the latter are very inefficient. In cases in which there is an enormous accumulation of fluid, the flow may be so rapid from incisions that the patient passes into a state of collapse.

In the author's operation he has modified Curschmann's trocar. He has made it somewhat stronger, so that it may be pushed through a thickened skin. The successful use of it depends upon the ability of the patient to maintain approximately the same position for several hours. The skin is carefully sterilized and the trocar thrust into the subcutaneous tissues. It is connected with a rubber tube which leads to a receptacle under the bed. At the point where the tube is introduced, an antiseptic dressing is applied. With such a method of drainage it is possible to control the flow and thus overcome the tendency to syncope present in some cases. After the removal of the tube the wound can be dressed with simple collodion.

Suprarenal Gland in the Treatment of Epilepsy.—

C. C. Hill, in the *Bulletin of the Laboratory of Mount Hope Retreat*, 1899, reports what he regards as brilliant results in the treatment of epilepsy by a combination of suprarenal gland, calcium chloride, and sodium bromide. The theory upon which this substance is administered is that in epilepsy there is a want of tone of the vascular system. The suprarenals have a power of maintaining a tonic contraction of the tissues which seems to be essential to their

proper physiological activity. The preparation employed was that of Messrs. Armour & Co., in which one grain of the dried powder represents eight grains of the fresh gland. The administration of the dry powder was found to be uncertain in its action, and it was thought that this might be due to some disturbance in absorption due to varying conditions of the gastric secretion. Accordingly, a solution was prepared by macerating for twenty-eight hours one ounce of the dried powder with 200 cubic centimeters of glycerin and 300 cubic centimeters of water. Biniodide of mercury was added in the proportion of $\frac{1}{20}$ of a grain to each grain of the powder. The mixture was filtered and made up with water, so that one grain of the gland represented one ounce of the solution. To this was added two grains of calcium chloride and five grains of sodium bromide, to each drachm of the solution. A teaspoonful of this mixture was given three times a day. No special regulation of the diet was enjoined, but a cathartic was regularly used once a week. In every case in which this mixture has been given there has been a marked decrease in the number of spasms, and especially an improvement in the temper and general health. None of the patients have been under observation long enough to say they are cured, but some very intractable cases have been greatly benefited. It was especially noticeable in a young man in whom the regular treatments had been employed with no benefit at all. He was quarrelsome and pugilistic, requiring constant watching to keep him out of trouble. Under the treatment he became quiet and manageable. His intelligence improved, and he was able to occupy his mind in reading and playing games, which he had not done before. His attacks came at longer intervals and were so mild as to attract little attention. Another chronic case, with fever, frequent attacks, and much disturbance, went a month with only one mild attack. The writer reports that untoward results were noted in a number of cases in which large doses were employed—those ranging from six to ten grains. In some of these there was salivation and an increase in the bronchial secretions, often accompanied with offensive odor of the breath.

Treatment of "Colds."—

W. Scheppegrell, in the *Medical News* of October 13, 1900, describes a cold as an inflammation usually involving the upper air-passages, with sneezing, congestion, an irritation of the nasal mucous membrane with discharges from the nostrils, and with or without soreness of the throat, and hoarseness. The laity believe that this collection of symptoms is due to exposure, though as a matter of fact

those who live chiefly out-of-doors, such as soldiers, sailors, and hunters, very rarely suffer from this condition. The laity commonly make the mistake of wearing an excessive amount of clothing to prevent "catching cold," but this is wrong, as too much clothing predisposes to the condition which it is desired to prevent; the inner layers become damp, preventing transpiration from the surface, with consequent chilliness. An excessive amount of clothing also decreases the amount of normal resistance, so that slight draughts or changes of temperature make the patient liable to this affection. In addition to clothing, the most striking predisposing cause of colds is poor ventilation and overheating of houses, especially where steam or hot water is employed.

The most useful method of preventing coryza is the cold shower bath, which should at first be taken at a temperature of 50° to 70°, according to the tolerance of the patient, immediately upon rising in the morning, or succeeding the warm bath. This stimulates the normal reaction of the body and accustoms it to reaction to cold, when the latter occurs in the form of exposure out-of-doors. The constitutional treatment of colds is of comparatively little value. A certain number are due to the uric acid diathesis, and these are benefited by the free administration of lithia. A brisk saline cathartic, if taken within the first three or four hours, is one of the most useful remedies and is devoid of unpleasant consequences. Quinine, which is so commonly employed to abort a cold, is said to be of little value; at most, it only inhibits the unpleasant symptoms which accompany this condition without shortening its duration. Locally, cocaine is sometimes employed, but it should never be used, because of the danger of contracting the cocaine habit. Simple cleansing of the nose with normal salt solution at body temperature is free from unpleasant consequences, and if care is exercised to avoid blowing the nose and to introduce the fluid with slight pressure, there is very little danger of its entering the Eustachian tube.

Mercurol in Urethritis.—

Ramon Guiteras, in *The Lancet* of September 22, 1900, reports 100 cases of urethritis treated with mercurol. The injections were made with a small hand syringe by the patients, who were mostly out-patients of a public dispensary. Mercurol, to which we have referred in previous issues in this department, is a compound of mercury with nucleinic acid. The latter ingredient is obtained from yeast, and it is thought to be devoid of any special property, its union with mercury serving only to place the mercuric salt in

organic combination, in which condition it is readily soluble and only slightly irritating.

In all the writer claims to have treated about 150 cases, but only about 100 of this number are available for statistical study. Even of this smaller number the uncertainties of an ambulatory clinic are said to throw doubt upon some. Some of the patients attended irregularly, only coming to the clinic when there was apparent discharge. Others persisted in the treatment until there was what the anthor describes as an absolute cure, namely, there were no shreds or pus in the urine. After allowing everything for uncertainty in the application of the remedy, the writer comes to the conclnsion that there are sixty-five cases in which something can be predicted as to the value of the remedy. The number of cases cured in four weeks were over ten, or 15 per cent; those cured in six weeks or under, fifteen, or 23 per cent; cases practically cured, as there was no discharge, though there were some shreds in the urine at the end of from four to eight weeks, twenty, or 30 per cent; cases not cured in from four to eight weeks, twenty, or 30 per cent.

He notes that solutions of mercury decompose, and he thinks that may account for some cases in which irritating effects were noted, even when dilute solutions were used. There was a striking absence of complications; in only one case was epididymitis noted, and one had gonorrheal rheumatism. In comparing this proportion claimed by some writers, namely, 20 per cent of cases snffering from epididymitis, the absence of complications is very striking. In only one of the 100 cases was there any marked posterior urethritis. The drug was employed in varying strength, from one- to five-per-cent. The weaker solutions had very little effect, and the stronger were found to be very irritating. The average efficient solution was two-per-cent, or approximately ten grains to the ounce.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Cold Baths in Typhoid Fever in Children.—

A. D. Blackader, in the *Archives of Pediatrics* for September, 1900, has had an opportunity of studying several epidemics of typhoid fever in children that have occurred in Montreal; they were due to the dissemination of infection in milk. The cases include twenty-nine in his private practice, twenty-eight in the Montreal General and twenty-three in the Royal Victoria Hospitals. The treatment in the majority of these cases was the regular systematic employment of cold baths. In fifty-three cases the bath was

employed whenever the temperature rose above 102°. In nineteen instances the first few baths were given at 90° F., reduced to 85°, and afterward continued at 85° F. Their duration was ten minutes, and they were repeated every three hours, if the temperature remained high. In thirty instances sponging with water at a temperature of 65° or 70° was given every three hours, and in three instances the cold pack was employed. The writer is convinced of the great value of the systematic employment of the cool or cold bath in typhoid. The Brand rule of using the bath when the temperature reaches 102.4° should not be adhered to rigidly, and a marked fall in the temperature as a result of the bath is not to be desired. Rapid falls are almost invariably followed by an equally rapid rise. Baths are to be employed, not for their action on the temperature alone, but for their stimulating action upon the heart, respiration, and secretions, especially those of the kidneys. The nervous system of the child responds more readily to the cold bath than does that of the adult, and the amount of response is in some respects in inverse ratio to the age. The bath should not have a temperature for children as low as that which is employed for adults. The duration of the bath, its temperature, and the frequency with which it is employed should be modified to suit each case; all sudden and severe shocks should be avoided. It is a great shock to a young child to plunge it at the outset into a bath of 68° or even 75° F., while a bath of 90° F. cooled to 85°, repeated regularly for the first few days of the attack, gives rise to neither resistance nor signs of collapse on the part of the child. Later on in the disease lower temperatures may be employed if found necessary. Even if the pyrexia falls below 102° F. the regular use of the cool bath once or twice a day strengthens the heart action and tends to a rapid convalescence.

The Role of the Liver in the Production of Eclampsia.—

W. A. N. Dorland, in the *American Journal of Obstetrics* for September, 1900, says that there is a reaction against the late established theory of attributing all cases of puerperal eclampsia to a renal inadequacy pure and uncomplicated, as manifested by an albuminuria of varying degrees of intensity. The tendency to-day is to ascribe the convulsive seizures and albuminuria to one and the same cause, namely, the presence in the blood of a certain toxin of unknown constitution and origin. The frequency of marked hepatic lesions in autopsies on eclamptic women points to the probability of their being liberated in this organ. Pregnancy directly increases the production of toxic principles, and in cases of organic insuf-

ficiency intoxication must occur. Pregnancy is characterized in the beginning by a marked increase in the waste products of the body and an increase in the production of leucomaines. The toxicity of the urine is increased. The elimination furnished by the menstruation ceases, and the condition of pregnancy increases the work of the lungs and heart. There is an increased tendency to dyspepsia with intestinal fermentation. As long as the kidneys can do so, they dispose of the morbid products of the bowel and thus still further add to the toxicity of the urine. The function of these organs may be impaired by the overwhelming amount of toxic matter in the blood and prove inadequate to its elimination. This, in brief, is the theory of autointoxication that is steadily gaining ground. In reality there is a hepatic inadequacy rather than a renal.

In the etiology of this condition a sedentary life, tight lacing, warm climate, and arthritism are predisposing causes. In the majority of cases eclampsia is preceded by dyspeptic symptoms, and Hanot claims that the incoercible vomiting of pregnancy is only an expression of a slow autointoxication of hepatic origin. Strumpf has found acetone in the urine of all eclamptic persons; the urine at the same time was found to be low in toxicity, while the blood serum was two or three times more poisonous than the serum of health. An excess of waste products reaches the liver of a pregnant woman, and there causes a degeneration of the hepatic cells with a retention of materials that quickly break up into toxins. Increased toxicity of the blood in pregnancy has been shown by Van der Velde, who showed that pregnant rabbits were much more sensitive to the action of human urine than non-pregnant animals. A lessened toxicity of the urine must mean increased toxicity of the blood. Given a free escape of the nitrogenous elements in the urine, the liability of eclampsia diminishes in direct proportion. The percentage of urea is an index of the amount of waste successfully excreted, and if this percentage is high there is probably not a great accumulation of poisons in the blood. It is evident that the albumin is not an index of the liability to eclampsia, but the daily amount of urine excreted and the relative proportion of solids contained in it. The abrupt cases of eclampsia usually show not a trace of albumin, but a diminished excretion of the urinary solids.

Rupture of the Symphysis Pubis During Parturition.—

G. A. Himmelsbach, in the *Philadelphia Medical Journal* of October 13, 1900, says that this comparatively rare accident occurs with

sufficient frequency to justify a more extended reference in the text-books than it receives. Sometimes the articulation is separated without being ruptured, this being favored by the softening of the pelvic ligaments which occurs in the latter months of gestation. Ahlefeld has collected 100 cases of lesions of the pelvic bones. Duhrssen has recorded thirty-three cases in which separation of the joint followed an injury.

The case reported by the writer occurred in a primipara aged 25 years. The labor began at 10 A.M., the pain continuing regular and strong until 10.30 P.M. An examination at that time revealed the head in the first position. The pelvis seemed to be roomy, but no exact measurements were taken. The perineum was rigid. At 1.30 the following morning the os had fully dilated, and the head began to descend. It was arrested at the perineum and remained there for one and a half hours, when there was spontaneous delivery.

The following day the patient complained of some soreness and difficulty in moving. The next day tenderness was noted over the pubis, and in the right hip posteriorly. Every time the patient was moved, a crackling or snapping noise was heard. This was audible several feet from the bed, and was painfully felt by the patient. An examination showed that the symphysis pubis had been separated, and the slightest movement of the patient would cause the two articular surfaces to glide upon each other. Swelling and ecchymosis were noted over the left sacroiliac synchondrosis, but no motion was apparent in this joint. A strong and broad bandage was applied to the pelvis and the patient kept on her back for twenty-four days. Nearly one month after the delivery it was difficult for her to stand because of pain in the pubis. Nearly five months later there was some pain, especially on ascending a stairway, by which the weight was alternately brought upon one hip and then upon the other.

Basedow's Disease in Infancy.—

Zuber, in the *Archives de Médecine des Enfants* for October, 1900, reports a case of exophthalmic goitre in a child of 13 years. The father of the child was an alcoholic, and the mother was the daughter of an alcoholic, though she had never used liquor and was not nervous. She had suffered from rheumatism. There were no cases of goitre in the family. She was the mother of four other children who were in good health.

The patient was born at term after a normal pregnancy. At thirteen she had measles, but no other disease of childhood. The

patient was not specially nervous or impressionable. In August, 1897, it was noted that the neck was large, but there were no nervous troubles or palpitation. This goitre was treated with iodine. In November, 1897, the child began rapidly to emaciate, and the treatment was changed to arsenic. For the next three weeks the loss of flesh continued, notwithstanding that a normal amount of food was taken. She then developed headache and constipation. Upon reception into the hospital, the patient was agitated and impressionable. The voice was hoarse, tongue and mouth dry, thirst was marked, and the temperature slightly below normal. The pulse was 130. The entire upper part of the body trembled. The vibrations were rapid, with marked trepidation. Slight exophthalmus was noted. The pupils were dilated, but Graefe's sign was absent. The neck was large, with a distinct goitre, or hypertrophy, involving mostly the right lobe. The goitre was not constant; it pulsated, and there was a distinct thrill. A murmur was heard over the goitre, systolic in time. The response to the electric current was not decreased. There were no hysterical stigmata. The fields of vision were not restricted. Sensation and the reflexes were normal. The frequency and intensity of the cardiac sounds were increased without modification of the size of the organ. The urine was normal. Treatment was continued from January to July, consisting mostly of the application of the galvanic current to the eyes and through the upper part of the neck. Under this treatment there was a gradual recession of the symptoms and diminution of the goitre, the tumor becoming hard and the pulsations and murmur disappearing. The patient improved in general health and flesh and was finally discharged, practically recovered, though the tachycardia persisted.

Tuberculin in Diagnosis of Tuberculosis in Early Infancy.—

Mettetal, in *Archives de Médecine des Enfants* for October, 1900, gives the results of a study of seventy-four infants who were given an injection of tuberculin. The writer speaks of the difficulty of diagnosis of tuberculous infants; those physical and functional signs which are so pronounced in adults are often absent. Young infants with tuberculosis often die with a marked diarrhea, vomiting, and convulsions. The tuberculosis is often present in the form of granuloma. It is in these obscure cases that tuberculin is of such signal value. It is dangerous in two classes of cases—those which are greatly emaciated and have diarrhea, and those in which the temperature is slightly below normal. The reaction may be dangerous

in those who have a temperature considerably above normal. As a rule, tuberculin injections are better borne by children than by adults, and the reaction is, as a rule, more certain. The tolerance established by repeated injections is much more rapid than in adults. As a rule, one tenth of a milligramme is sufficient in an infant to obtain an elevation of temperature of from 1° to 2.5° C. Of the seventy-four cases, eighteen came to autopsy; of these, six did not react to the tuberculin. Six died of gastroenteritis, one complicated by bronchitis; one died of rickets, and another of rickets complicated by syphilis. Of the twelve cases which reacted, all were found to have tuberculosis in some form, some involving the meninges, others the peritoneum, and others with a generalized tuberculosis. Of the cases in which no autopsy was performed, thirty-two did not react to tuberculin, and twenty-four did.

FORENSIC MEDICINE.

Two Interpretations of "Frenzy" by the Same Court.—

The *Journal of Mental Science* for October, 1900, reports two cases tried at the Manchester Assizes before Mr. Justice Channell.

The first was that of a man charged with the murder of his wife. Fifteen years before the commission of the crime the person had been confined in an asylum for four years. There had been frequent quarrels between him and the deceased, and some violence. On the night of the homicide the prisoner opened the door to let his son in, and told him that he had killed his mother. The son went for assistance, and on his return found the door blocked, and the prisoner threatened the incomers, and threw hot water on one of them. The woman was found dead, with marks of violence. When arrested, the prisoner said he would tell the trouble to the magistrates. A physician who was summoned said the prisoner looked dazed and said, "I did it." No signs of intoxication were noted in the prisoner at the time of the homicide. The physician to the prison had noticed nothing wrong with the prisoner's mind, except excitement and garrulousness. The physician who had charge of him while he was at the asylum testified that at that time he had numerous delusions and hallucinations, and he was further of the opinion that injuries so extensive as those found on the deceased had been caused by a man in a frenzy. The judge here asked the witness to define the word frenzy, which he did by saying that he meant the "effects of ungovernable passion." The prisoner

in his evidence said that on the day of the homicide he had had four pints of beer; his wife became very abusive and said "it only wanted a bit of paper to get him back to the asylum." She then went to kick him with her clogs and pull his face about with her hands, and she seemed to be about to get hold of the poker and tongs, which she had used before to strike him with, when all of a sudden the feeling came across him which he could not resist, and he got hold of the crowbar and hit her with it. It was dusk at the time, and though he kept striking around him with the crowbar, he did not know he was striking his wife. When he found that this was the case, he fell down and shouted out, "O my! O dear! What have I done?" Upon cross-examination, he said that the crowbar was in the coal-hole, and he could not say why he did not give this account at the inquest. The judge said that even admitting the provocation, if the prisoner went out of the room for the crowbar, it was murder and not manslaughter. The verdict of "guilty, but recommended to mercy," resulted.

In commenting upon this case, the *Journal* says that justice seems to have been fairly met. The jury could bring in no other verdict on the evidence, but took the previous insanity of the prisoner into account in their recommendation to mercy. The sentence of death was subsequently commuted on the same ground.

In Regina *vs.* Holt, a young woman of 25 was indicted for the murder of her new-born child. The prisoner was confined on a Sunday, and when first seen by a doctor the following Tuesday pointed, in answer to a question, to the top of a wardrobe, where the body of an infant was found, covered with marks inflicted with scissors. The defense was insanity. The judge said he could see nothing in the case that would lead to a verdict of manslaughter. As to irresponsibility, there had been no evidence of insanity in the ordinary sense. The existence of no fewer than seventy-seven wounds on the body of the infant indicated that in all probability at the time they were inflicted the prisoner was in a condition of frenzy, and if the jury thought she was in such a condition they might come to the conclusion that she had not any sound judgment and knowledge of what she was doing. In accordance with this ruling the jury returned a verdict of guilty, but insane.

The *Journal* calls attention to the remarkable character of these cases taken in connection with each other. In the second case the learned judge had no objection to the use of the word "frenzy;" he did not define what was meant by the word, but it was sufficient to exonerate the crime. The first case was tried on the following day,

and then the word was found to possess no such virtue, and the prisoner was convicted in spite of his frenzy. The extreme violence used by the girl upon her child pointed clearly to insanity in her, but the same degree of violence used by the man toward his wife was no indication of insanity. To the reporter it seems that either the man should have been found insane, or the girl should have been found guilty of murder. As possible reasons for the peculiar ruling upon the word frenzy, it is stated that the young woman was good looking; she was dejected; she cried and trembled in the dock; while the man seemed to be an uninteresting person, and in his case dry law took its course. It is hard he should not have had the benefit of his "frenzy."

To those of us who have been accustomed to think of the administration of the criminal law of Great Britain as altogether admirable, such an absurd ruling as the foregoing comes with something of a shock. It shows that legal conceptions of insanity are not always applied with greater accuracy in that country than they are with us. In the second case quoted it is evident that the insanity defense was of the pseudo variety, namely, it was invoked to shield one of those cases in which there are marked extenuating circumstances. In homicides by real lunatics there is usually a want of motive, and they frequently occur under such atrocious circumstances that the feeling of the public is roused, and the resentment of the jurors is excited against a prisoner by the very circumstances which clearly point to his irresponsibility. This often leads to a conviction, as was apparently the case in the first trial cited, in which "frenzy" was pleaded.

Increase in Suicides.—

The *Medical Record* of October 20, 1900, calls attention to the increase in suicides which marks most civilized countries. The mean annual rate per million of population for two decades and for the period 1881–84 and 1885–88 is given. In Saxony, the increase in these periods is respectively 281, 325, 370, 333; in Denmark, 283, 266, 249, 259; in France, 129, 161, 189, 212; in Prussia, 127, 153, 198, 204; in Belgium, 61, 81, 107, 116; in Sweden, 80, 86, 96, 110; in England and Wales, 66, 70, 74, 78; in Norway, 82, 70, 68, 66; in Italy, 27, 37, 37, 48, 48. It will be noted from the foregoing figures that with the exception of Norway the suicide mortality-rate has increased. In Norway, it is believed that the fall is due to the energetic attack of the Norwegian government upon the use of alcohol. It is also believed that emigration has

had something to do with keeping the rate of increase in some countries below what it is in others. A number of causes more or less speculative are offered to account for this increase. Weariness of life is said to be more frequent in an advanced civilization, which enlarges our ideas of enjoyment at a more rapid rate than it has supplied us with the means of gratifying them. Progress and education are believed to be powerful adjuvants to the general feeling of discontent, insomuch as the poorer classes have learned sufficient to be dissatisfied with their lot. The decay of religious sentiment and the growth of scientific knowledge are believed to be the most prolific causes. Agnosticism is said to play its part, because it is peculiarly rampant in large centers of population, such as Paris, Berlin, and Vienna, all of which furnish a very large proportion of suicides. Dr. Ireland is quoted as tracing the majority of the cases of suicide to severe strain upon the nerves, which is the outcome of a multiplicity of causes. The newspaper, with its tendency to sensationalism, comes in for some responsibility.

All this is purely speculative, as it would be impossible to gather accurate statistics of the causes of suicide. To our mind, one of the most powerful sources is degeneracy, to which the writer in the *Record* does not refer. We mean by degeneracy, not the high-arched palate or the deformed ears which represent the popular conception, but that multiplicity of conditions which tend to the degradation of individuals, and which are both hereditary and environmental. Modern medicine and philanthropy is responsible for some portion of this decay. Under a primitive civilization the defective, both mental and physical, are rapidly eliminated. The modern hospital and asylum, aided by medical science, interfere markedly with this natural law. The tuberculous and the defective are preserved to transmit their acquired and hereditary defects to succeeding generations. Suicide is in its essence a psychosis, in the sense that it presupposes a peculiar mental attitude on the part of the individual. We would not be understood as saying that all suicides are insane, because such would be far from the facts, but it is certainly in accordance with the facts to regard the suicidal impulse as in a sense a morbid prompting, and the yielding to it an indication of decreased resistance. A study of the family histories of suicides shows an unusual proportion of neurotic heredity, which argues the essential degenerate type of those who destroy themselves.

It may seem a harsh thing to say, and as applied to an individual case it undoubtedly is harsh, but the preservation of the defective,

which is so prominent a feature of modern civilization, cannot but result in a lowering of the average vitality and resistance in the races—that is, it must increase the number of degenerates in the community. The increase of this class necessarily implies an increase of suicide, crime, and insanity conditions. The statistics of the last forty years show a marked increase in the defective and delinquent classes.

A Case of Phosphorus Poisoning.—

W. E. Newey, in *The Lancet* of September 22, 1900, describes the case of a man who, while under the influence of alcohol, took a small quantity of rat-killer. Immediately thereafter he had violent pains in the stomach and vomited freely, from the latter having some relief. On the following day he dressed and walked about, but on the third day was taken much worse, and was found by the medical man who was summoned to have a normal temperature, and to be quite conscious and coherent. There was constant vomiting, thirst, and great pain in the stomach and abdomen. The vomitus consisted almost wholly of altered blood, and the stools were very dark. One week after the swallowing of the initial dose the patient died.

The post-mortem examination, made twenty-four hours after death, showed no signs of putrefaction, though the weather was very warm. The entire circumference of the neck bore the appearance of having been stained in a deep solution of Prussian blue. The color was well distributed and was very intense. The arms and legs showed an icteric tinge; their superficial veins looked as though they had been injected with a solution of Prussian blue, and were beautifully mapped out. The stomach contained a half-pint of liquid blood; its walls were thick, and were of a deep blue color, with ulceration and softening. The intestines showed signs of an irritant poisoning and were deeply pigmented, the contents being dark and pitchy. The transverse colon was intensely inflamed, and the fat of the great omentum showed bright extravasations of blood. The lungs and liver were colored a deep blue.

Poisoning by Codeine.—

M. J. Korrikow, in the *Philadelphia Medical Journal* of October 20, 1900, states that he saw in the morning a fairly developed nursing boy about a year old. He had a high temperature, for which one-half grain powders of phenacetine were prescribed. About 10 P.M. of the same day the druggist who filled the prescription

informed him that a mistake had been made, and the patient had received a prescription containing fifteen grains of bismuth and one-third grain of codeine in each powder. On visiting the patient, it was found that a powder had been given at 8 P.M. The pulse at the time was 110; the pupils were normal, reacting to light. There was no nausea and no symptoms of depression. An emetic with white of egg was given, which acted. An hour and a half later the child was sleeping, but could be easily roused; the breathing was normal, but the pupils were more or less contracted. The reporter thinks it remarkable that this relatively large dose of codeine caused so few symptoms. Mettenheimer reports a case of severe vomiting, colic, and retention of urine following an administration of two grains. Reamy has observed disagreeable symptoms in an adult following one grain of codeine. The writer thinks that absence of dangerous symptoms in his case can be largely attributed to the enormous quantity of bismuth, which prevented the absorption of the drug.

Ergot Poisoning.—

F. M. O. Gorman, in the *Philadelphia Medical Journal* of October 13, 1900, reports what he considers a typical case of ergot poisoning. Early one morning he was summoned to a woman who was in a comatose condition. The pulse was 58, small, weak; respiration was labored; temperature 98°. It was noted that the flexor muscles of the forearm underwent severe tonic contractions at intervals of a few minutes. Later the flexor muscles of the thigh and legs showed the same appearance. The toxic condition came on a short time before the patient was seen, and was initiated by giddiness and convulsions. The fluid extract of ergot had been taken in drachm doses every four hours for four days before the symptoms developed. The patient was removed to the hospital, where she remained unconscious for three days. Constipation was marked, but urination was free. The pupils were widely dilated. Purpuric spots appeared on the neck, arms, and limbs. The pulse at one time was as low as 56, and for two weeks never went above 70. The patient ultimately recovered.

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